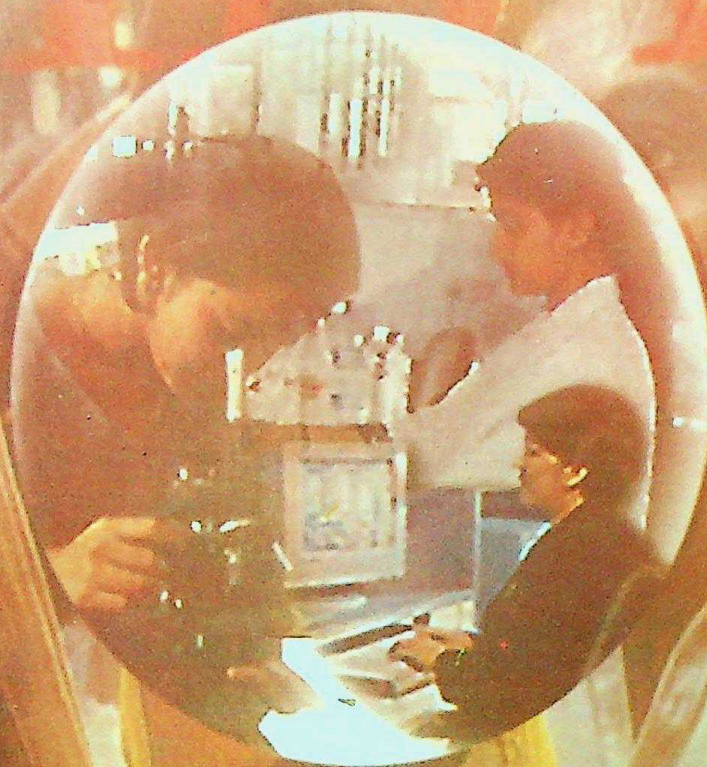


Gandhi Memorial College Of Education Bantalab Jammu

Women and Educational Development

MUKTA GUPTA



Two Parallel trends have gained momentum in the past two decades; one is the women and development debate and the other is the feminist movement and the great upsurge of women mobilization and organising around the world, continuing a centuries old struggle of women to liberate ourselves from oppression and subordination in society. The book has the following chapters in it.

1. Education
2. Education System, Growth of Institution Enrolment and Faculty
3. Development and Educational Communication Unit
4. Planning for Women's Education After Independence
5. Education Through Broadcasting
6. Facilities for Women Education
7. Carrers for Women
8. Educated Women Power
9. Education for Women's Equality
10. Pricing higher Education in India
11. Socio-Economic Indicators

Women and Educational Development

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Mukta Gupta

**G.M. College of Education
Raipur, Bantalab**

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Preface

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Preface

After the women conference in Nairobi in 1988, women researchers and activists fighting for recognition and participation in the planning process have understood once again that economic justice remains central to any improvement in the status of women in the third world. Not only be there genuine partnership for women in the development process, but the whole concept of development itself must be changed before it can work in the interest of any third world people.

Two parallel trends have gained momentum in the past two decades; one in the women and development debate and the other is the feminist movement and the great up. Surge of women mobilizing and organizing around the world, continuing a centuries old struggle of women to liberate ourselves from oppression and subordination in society A feminist perspective is, very relevant to development and developmental issues, that is, issues such as supplying basic needs for food, water, shelter, health and education.

However, development plannes and policy makers generally consider faminism as irrelevant to development. But certainly this is beginning to change further more, mere inclusion in developmental projects conceived by traditional male planners in either the developed or developing countries is almost universally not in women's interest.

The present Encyclopaedia has explored how women are challenging the assumptions that integrating women into development will solve problems caused by development plans and policies which have neglected or been detrimental to women to highlight the issues in more elaborated form, the encyclopaedia has been divided into four volumes:

1. Women and Educational Development;
2. Economic Participation of Women;
3. Women and Child Welfare and Media;
4. Various issues related to woemen.

The phenomenon in its varied dimensions with different volumes of this encyclopaedia explores. The various developmental processes are effecting women and how women are addressing issues of food, water and economic exploitation from a feminist perspective. We hope it would be of immense importance to teachers, social-workers activities and informed layman.

Lucknow

—Mukta Gupta

Preface

The first edition of this book was published in 1977. It was a modest attempt to provide a comprehensive survey of the history of the Jammu and Kashmir region. Since then, the region has undergone significant changes, and the need for a new edition has become apparent. This second edition is a revised and updated version of the first, reflecting the changes that have taken place in the region over the past three decades.

The book is divided into two main parts. The first part, which is the larger of the two, deals with the history of the region from the earliest times to the present. It covers the various dynasties that have ruled the region, the different periods of its history, and the major events that have shaped its development. The second part, which is smaller, deals with the present situation of the region, its political, economic, and social conditions, and the challenges it faces.

The book is written in a simple and straightforward style, and it is intended for a general audience. It is not a technical or scholarly work, but rather a popular history of the region. It is hoped that it will provide a useful and interesting introduction to the history of the Jammu and Kashmir region for all who are interested in the subject.

The author is a historian and a writer of books on the history of the Jammu and Kashmir region. He has a deep knowledge of the region's history and a passion for writing about it. He has written several books on the history of the region, and he has also written many articles on the subject. He is a well-known and respected authority on the history of the Jammu and Kashmir region.

The book is published by the Jammu and Kashmir Sahitya Akademi, which is a government organization that promotes the study and appreciation of the literature and culture of the Jammu and Kashmir region.

The book is available in both English and Urdu. It is a valuable addition to the literature on the history of the Jammu and Kashmir region, and it is a must-read for all who are interested in the subject.

The book is a testament to the author's dedication to the study and writing of the history of the Jammu and Kashmir region. It is a work of great scholarship and a valuable contribution to the field of history.

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Education

Education is a pre-requisite for progress and development. And in the order of priorities, Education has been accorded a high priority as an integral part of country's developmental process. Due to concerted efforts during the last four decades of independence, a four-fold increase has been registered in the total number of literates. With the increase of more than four times in the number of pupils in the primary schools, the number of such schools has also more than doubled. The number of universities has also gone up by more than five times. Together with the quantitative expansion of educational facilities, there is now a greater emphasis on qualitative improvement.

Before 1976, education was exclusively the responsibility of the states, the Central Government being concerned with certain areas like co-ordination and determination of standards in technical and higher education, etc. In 1976, through a Constitutional amendment, education became the joint responsibility of the Central and state governments.

During the Seventh Plan, the main thrust of educational activities is towards promotion of quality and excellence, ageing the education system to meet the challenges of emerging areas of science and technology, providing wider opportunities for vocational education at different levels and restructuring the education system to encompass the development of the country's human resources potential.

Determined efforts will be made in the Seventh Plan period to achieve the goal of universal elementary education and eradication of illiteracy in the agegroup 15-35 by 1990. Detailed block and school level planning with community participation and effective linkages with the local environment and development activities is envisaged as a major strategy to overcome the several obstacles associated with achieving the goal of universal elementary education and eradication of illiteracy. A programme named "Operation Black Board" is being implemented to provide the basic amenities in education in primary schools. An important focus of the Seventh Plan is to raise the quality and relevance of education. In particular, efforts would be made to raise the standards of science and mathematics teaching at all levels. Non-formal education and open learning systems are being encouraged at all

Source : India 1987 A Reference Annual Publications Division Ministry of Information and Broad Casting Government of India.

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levels. Education of scheduled castes and tribes and people of hill areas is being specially promoted. Women's education, which is an area of special importance, will be similarly promoted. Necessary reforms will be initiated to make vocational education more attractive and prestigious. Degrees will not be insisted upon as an essential qualification or pre-condition for jobs where it has no specific relevance.

Education Management/Planning

Besides policy formulation, the department of education shares with the state governments the responsibility for educational planning. Uptill the Sixth Plan, education was taken to be a social service rather than an input in the development process. There has been a change in the emphasis beginning with the Sixth Plan, wherein it has been considered to be pivotal in the social and economic development of the country through development of human resources. The National Policy on Education (1986) which is popularly known as New Education Policy, was approved by the Parliament in May 1986. It envisages universalisation of primary education and adult literacy by 1990. In this policy, priority has also been given to the qualitative importance of education specially technical and higher education, vocationalisation of secondary education, development of regional languages, strengthening of monitoring and evaluation machinery for effective implementation of plan programmes, etc. Emphasis has also been laid especially on dynamic and beneficial linkages between education, health, social welfare and employment programmes.

Expenditure

During the Sixth Plan, an outlay of Rs. 2,524 crore for education was approved by the Planning Commission, where as the anticipated expenditure is Rs. 2,945 crore. For the Seventh Plan, the Commission has approved an outlay of Rs. 6,383 crore.

According to latest available budget estimates for the year 1985-86, the total budgeted expenditure of the Central and the state education departments works out to Rs. 9,999.17 crore, forming nine per cent of the total budget of the Central and state governments. The detailed achievements and targets on education have been given in Table 1.1.

Literacy

According to the 1981 census, the national average literacy rate, which was 16.67 per cent in 1951, has increased to 36.23 per cent in 1981. Eighteen states and union territories are above the national average. According to the 1971 census, the highest literacy rate of 61.56 was in the Union Territory of Chandigarh and the lowest literacy rate of 11.29 was in Arunachal Pradesh. In 1981, Kerala improved its earlier position of number two in the ranking of literacy rate and attained the highest position with a literacy rate of 70.42 per cent, while the lowest literacy rate of 20.79 continues to be in Arunachal Pradesh. The literacy position in the age-group 15-35 increased from 254.1 lakh in 1951 to 1,101 lakh in 1981. The total number of literates increased from 601.9 lakh in 1951 to 2,475.5 lakh in 1981 (including the estimated literate population of Assam), a four-fold increase in thirty years. Simultaneously, the total number of illiterates has increased from 3,009 lakh in 1951 to 4,376.3 lakh (including the estimated illiterate population of Assam) in 1981, of which 3,695.2 lakh (84.44 per cent) live in rural areas. The literacy rates among men is 46.89 per cent against the female literacy rate of 24.82 per cent. Of the total 412 districts in the country (1981 census), 243 districts had a literacy level below the national average, inclusive of 193 districts where the female literacy rate was below 20 per cent.

Elementary Education

The highest priority has been given to the programme of universalisation of elementary education for fulfilment of the Constitutional directive of providing universal free and compulsory education to all children upto the age of 14. The National Policy on Education, 1986 resolved that all children who attain the age of 11 years by 1990 will have had five years of schooling or its equivalent through the non-formal stream. Likewise, by 1995, all children will be provided free and compulsory education upto 14 years 1986-87.

Table 5.2
Enrolment Achievements and Targets

	<i>(Figures in lakh)</i>	
	<i>1985-86 Achievements</i>	<i>1986-87 Targets</i>
Age group 6-11 Enrolment (Classes I-V)	891.26	931.10
Enrolment as per cent of age group population	(95.36)	(99.20)
Age group 11-14 Enrolment (Classes VI-VIII)	289.97	312.89
Enrolment as per cent of age group population	(55.63)	(59.76)
Age group 6-14 Enrolment (Classes I-VIII)	1,181.23	1,243.99
Enrolment as per cent of age group population	(81.14)	(85.08)

Presently, education in classes I-VIII in all Government/local bodies and aided schools in most of the states/union territories in the country is free.

Secondary Education

Education is free upto lower secondary (upto Class X) stage in 16 states and five union territories, namely, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Gujarat, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Mizoram, Nagaland, Sikkim, Tamil Nadu, Tripura, West Bengal, Andaman and Nicobar Islands, Dada and Nagar Haveli, Daman and Diu, Lakshadweep, and Pondicherry. Besides, it is also free for girls in Manipur, Orissa, Rajasthan and Uttar Pradesh. Children belonging to scheduled castes and scheduled tribes get free education in all states and union territories upto Class X.

Education upto the higher secondary stage (Class XI-XII) is free in Gujarat, Jammu and Kashmir, Himachal Pradesh, Tripura, West Bengal, Sikkim and in the union territories of Arunachal Pradesh, Andaman and Nicobar Islands, Dadra and Nagar Haveli and Pondicherry. The Central Government is reimbursing the tuition fees charged from girls in Classes IX to XII in government aided/local body schools to the state governments and union territories from the year 1985-86.

10 + 2 + 3 Pattern

The adoption of the 10 + 2 + 3 pattern was first recommended by the Calcutta University Commission (1917-19). The proposal was also endorsed by the Central Advisory Board of Education.

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It was made part of the national policy on education in the policy resolution of 1968. Apart from a uniform structure, the pattern provides for changing the content of education to suit national needs. The system makes vocation-alisation of the higher secondary stage easier and more effective. Above all, the system helps in raising standards both at the school and the university stages.

All the stages/union territories have switched over to 10 + 2 pattern of education.

University and Higher Education

Higher education is imparted through 132 universities and a large number of arts, science, commerce and professional colleges affiliated to them. Besides, there were 20 institutes in several specialised fields which are deemed to be universities under the University Grants Commission Act, 1956, as on 1 July 1986. Ten institutions have been declared by Parliament to be institutions of national importance.

University Grants Commission

The University Grants Commission, set up initially in 1953, promotes and coordinates university education and determines and maintains standards of teaching, examination and research in the universities. It has the authority to enquire into the financial needs of the universities and to make appropriate grants to different universities. It advises on the establishment of new universities and other matters pertaining to higher education.

National Professorship

The Government instituted in 1949 a system of National Professorships to honour distinguished academics and scholars in recognition of their valuable contribution to knowledge. Persons of real eminence who have attained the age of 65 and who have made outstanding contribution in their respective fields and are still capable of further productive research are considered for appointment as national research professors. The appointment is made initially for a period of five years which is extendable by another five years.

National Professors (the disciplines and the years of appointment are given in the brackets) appointed since the inception of the scheme are Dr. Chandrasekhar Venkat Raman (1888-1970, Physics-1949), Dr Satyendra Nath Bose (1894-1974, Physics-1958), Dr Radha Binod Pal (1886-1976, Juisprudence-1959), Dr Pandurang Vaman Kane (1880-1971, Indology-1959), Dr Sisir Kumar Mitra (1890-1963, Physics-1962), Dr Darashaw Nosherva Wadia (1883-1969, Geology-1962), Dr Vasant Ranjit Khanolkar (1895-1978, Medicine-1963), Dr Suniti Kumar Chatterjee (1890-1977, Humanities-1965), Dr Shiyali Ramamrita Ranganathan (1892-1972, Library Science-1965), Dr Salim Moizudding Abdul Ali (1896-1987, Ornithology-1982). Dr Tellyavaram Mahadevan Ponnabalam Mahadevan (b-1911, Philosophy-1982), Dr Vijayendra Kasturi Ranga Vardaraja Rao (b-1908, Economics-1984), Dr Durga Das Basu (b-1909, Constitutional Law- 1986).

Special Research Organisation

The Indian Council of Historical Research, New Delhi, set up in 1972, enunciates and implements a national policy of historical research and encourages scientific writing of history. It operates research projects, provides, financial support for research projects by individual scholars and awards fellowships and undertakes publication and translation work.

The Indian Council of Social Science Research, New Delhi, is an autonomous organisation set up to promote and coordinate social science research in the country. Its main functions are to review the

progress of social science research, to give advice to its users in Government or outside, to sponsor research programmes and give grants to institutions and individuals for research in the field of social sciences.

The Indian Council of Philosophical Research, with offices at New Delhi and Lucknow, has been set up by the Government to review the progress of research in philosophy from time to time, to sponsor or assist projects or programmes of research in philosophy, to give financial assistance to institutions and individuals in the conduct of research, etc.

The Indian Institute of Advanced Study, Shimla, set up in 1965, is a residential centre for advanced research in the fields of humanities, social sciences and natural sciences. It is a community of scholars engaged in exploring new frontiers of knowledge aimed at making major conceptual developments and offering inter-disciplinary perspectives on questions of contemporary relevance. Based on the recommendations of the Expert Committee set up under the Chairmanship of Shri Krishna Kriplani, the Institute has recently been reorganised.

Technical Education

Trained manpower at the middle level is needed for a wide range of professional duties, for application of knowledge in field operation, in production and construction, testing and development, etc. For this purpose, diploma courses are offered in about 330 approved polytechnics, with an annual enrolment capacity of about 58,000 students. They offer a variety of courses in engineering and technology. In addition, there are other institutions which conduct courses at diploma level like pharmacy, hotel management, etc. To add to this figure, there are 42 more approved polytechnics which are meant exclusively for girls. They are admitting about 5,200 girls per year. The polytechnics not yet approved by the All India Council for Technical Education/Government of India have been excluded from the figures given above.

The polytechnics are widely spread all over the states and union territories. They are affiliated to the respective State Board of Technical Education which lay down, in general, the levels and standards of the courses and are responsible for the evaluation of the polytechnics and students. The courses are normally of three years' duration, where full-time institutional instruction is offered and 3½ to 4 years where instruction is on a sandwich pattern or on part-time basis. The vocational training/craftsmen courses are offered at the industrial training institutes.

For the professional engineers and technologists, 170 approved engineering colleges offer courses leading to Bachelor's degree in engineering and technology of the respective university. The total admission capacity annually for these courses is about 34,000.

The number of institutions offering post-graduate courses is about 105 with annual capacity of about 6,500. Facilities also exist at most of the centres for part-time courses at the postgraduate level for those who are already in service. The duration of a full-time Post-Graduate Course in Engineering and Technology is of three semester.

Five national institutions at Bombay, Kanpur, Kharagpur, Madras and New Delhi, known as Indian Institutes of Technology, provide facilities for undergraduate and post-graduate courses as well as for research in engineering and technology. These institutions admit about 1,600 students annually to undergraduate courses. Besides, these institutions along with the Indian Institute of Science, Bangalore admit nearly 2,000 students every year to the post-graduate courses and 1,500 research scholars. There

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are 17 regional engineering colleges providing facilities for education in various branches of engineering and technology. For specialised courses such as mining and metallurgy, industrial engineering, forge and foundry and architecture, a number of centres have been established. To integrate engineering education with practical training, a number of engineering colleges and polytechnics are now offering sandwich courses in collaboration with industry. The duration of such courses for degree in engineering is 4½-5 years and for diploma 3½-4 years. There are four technical teachers' training institutions located at Calcutta, Bhopal, Chandigarh and Madras to train teachers needed for polytechnics.

The four national level institutes at Ahmadabad, Calcutta, Bangalore and Lucknow provide assistance to private and public sector enterprises in meeting their needs for managerial manpower through their well-designed post-graduate programmes. At present the annual student enrolment capacity of these four institutions is about 500. These institutions also provide assistance in the solution of management problems and contribute to the development of indigenous literature on the science of management through organising programmes of research, consultancy and publication and also conduct Fellowship Programmes which are equivalent to Ph.D. In addition, there are about 55 institutions in the university sector--professional bodies and voluntary organisations offering full-time, part-time as well as correspondence courses in general and in functional areas in the field of management.

There is a scheme of community polytechnic at selected diploma level institutions all over the country to promote community/rural development on scientific lines through transfer of technology to rural areas.

Adult Education

In accordance with the directives of National Policy on Education, 1986 (NPE) and the implementation strategies envisaged in the Programme of Action, the Government has formulated a comprehensive programme known as 'National Literacy Mission (NLM)' in the field of adult education. The objective of NLM is to impart functional literacy to 800 lakh illiterate persons in 15-35 age group--300 lakh by 1990 and an additional 500 lakh by 1995. At present, there are 513 projects in operation in various states and union territories.

Voluntary agencies have been playing an important role in the Adult Education Programme. There are at present 382 voluntary agencies working in the field. In addition 40 *Shramik Vidyapeeths* and 16 state resource centres are functioning in different states to cater to workers' education and to provide technical resource support to the programme.

Launched in 1986, the Mass Programme of Functional Literacy covered over 4.20 lakh learners. During 1987, a still ambitious programme has been adopted involving both students and teachers of schools and colleges with inputs for research studies on the success of the programme. The programme has been designed keeping in view the needs and language of the learners.

Government has selected 40 districts with Techno-pedagogic and Research and Development inputs to improve the quality of adult education. A computerised management information system is being instituted to ensure reliable and steady flow of information needed for improvement in management of this programme at all levels. It is only after evaluation of the impact that the programme will be taken up in big way to spread literacy in the minimum possible time.

Women Education

In recognition of the importance of education of girls and women in accelerating socio-economic

development, the Government has formulated a variety of measures from time to time in this direction. The National Policy on Education (NPE) envisages that education would be used as a strategy for achieving a basic change in the status of women. The national education system would (i) play a positive interventionist role in the empowerment of women; (ii) contribute towards development of new values through redesigned curricula and text books; (iii) promote women's studies as part of various courses. The main features of the targets and implementation strategy will be (i) to gear the entire education system to plan a positive interventionist role in the empowerment of women; (ii) to promote women's studies as a part of various courses and encouragement to education institutions to take up active programme to further women's development; (iii) to widen the access of women in programmes of vocational, technical and professional education; and (iv) to create dynamic managerial structure to cope up with targets envisaged.

In order to promote women's education, the Government has also introduced a scheme for reimbursement of tuition fee to girls in Classes IX-XII in government/government aided/local body schools in the states/union territories. The scheme is effective from 1985-86 and will continue during the Seventh Plan period. During 1986-87, a sum of Rs. 1,361.05 lakh was given to the states/union territories under this programme.

Education Technology

An Educational Technology Programme was started in the Central sector in 1972 during the Fourth Plan. It aims at deploying the resources of education technology for bringing about a qualitative improvement in education, widening access to education and reducing existing disparities between different regions of the country as well as different sections of the population. Under this scheme educational technology cells in 21 states and a centre for educational technology in National Council of Educational Research and Training have been set up.

In the context of the availability of the television facilities on INSAT, the Ministry of Information and Broadcasting suggested that the user ministries should take active part in the production of programmes meant for their specific uses. This would ensure that the programmes are relevant, meaningful and effective. It was thus necessary to create production capabilities at a decentralised level. The Ministry of Education decided that the responsibility for the production of educational television programmes would be gradually taken over by the educational authorities from Doodarshan.

In order to implement this decision it was necessary to set up programme production centres in the INSAT states in a phased manner. Accordingly, States Institutes of Educational Technology (SIET) are being established in each of the six INSAT states, namely, Andhra Pradesh, Orissa, Gujarat, Maharashtra, Uttar Pradesh and Bihar, for promoting production of ETV (Educational Television) programmes on a decentralised basis. The non-INSAT states and union territories are being prepared for participation in the INSAT programme through an educational technology scheme under which limited production capabilities are being created to enable the states and union territories to experiment in production of programmes and organise training courses. At the Central level a Central Institute of Educational Technology (CIET) has been set up in National Council of Educational Research and Training by merging the existing Centre for Educational Technology and Department of Teaching Aids.

The major priorities identified for educational programmes, particularly in relation to the use of radio and television facilities for educational purposes, are (a) universalisation of elementary education,

both formal and non-formal; (b) nonformal education for adult, linking education to economic and social tasks; (c) development of vocational and professional skills; (d) training for citizenship; (e) popularising science with a view to developing a scientific outlook; (f) promoting national integration; and (g) providing information about themes of national importance--population education, energy conservation, preservation of wildlife, environmental sanitation, nutritional and health.

Keeping in view the large requirements for teacher education, the mass media will be used to broaden the horizon of teachers; to provide help in formal school teaching; and to assist in appreciation of the objectives of the educational uses of television and radio to ensure better utilisation.

The state production centres will be responsible for the production of television programmes of acceptable professional quality and educational utility. To begin with, the programmes would be limited to elementary education, non-formal education and teachers' training. Once the production centres become fully operational they will cater to the programme requirement of all levels of education.

Till such time as the state production centres become operational, the CIET is producing programmes which are being telecast in six states. The production of ETV programmes for the INSAT states was hitherto shared between Doordarshan and CIET on 50 : 50 basis. However, from May 1987 responsibility has been taken entirely by CIET. CIET has also produced capsules for mass orientation of teachers during the summer vacations. Two programmes are being telecast daily in the regional languages, five days a week, for school children in the age group 5-11 during the normal working hours of the schools. On every Saturday there is a programme for teachers. In view of the limited production facilities available the CIET is presently producing programmes in Hindi or English and dubbing them into regional languages of the states concerned. Production of programmes (and dubbing of CIET programmes) has been taken up by SIET in Gujarat and Maharashtra. Andhra Pradesh, Bihar and Uttar Pradesh have also started some programme production. The responsibility for radio transmission still rests with AIR.

National Council of Educational Research and Training

The National Council of Educational Research and Training (NCERT) established in 1961, with headquarters in New Delhi, acts as the principal agency for academic advice to the Ministry of Human Resource Development, in matters pertaining to the formulation and implementation of policies and programmes for the qualitative improvement of school education. It works in close collaboration with the education departments of the states, universities and other institutions having an interest in school education. It also maintains close contact with international organizations. Besides the National Institute of Education, New Delhi, the Council has four regional colleges of education at Ajmer, Bhopal, Bhubaneswar and Mysore and a Central Institute of Educational Technology (CIET), New Delhi as also a network of 17 field offices located in various states and union territories for liaison with state education departments.

The Council is mainly engaged in research, development, training and extension and has provided support to the implementation of 10+2+3 pattern of education. Besides developing curriculum for the various stages of school education, it produces textbooks in almost all the subjects for the entire school stage (Classes I-XII). The states are free to adopt or adapt NCERT textbooks for their schools and supplementary reading material of enriching the knowledge of children. The CIET produces video tapes, tape-slides, films and other audio-visual materials for use in school. The council produces lowcost science kits for primary and middle schools. The Council is also implementing UNESCO and

UNICEF assisted projects in the areas of elementary education.

Computer Literacy and Studies in Schools (CLASS) project has been undertaken to introduce computers in certain selected secondary and senior secondary schools. Population education project in collaboration with UNFPA has been undertaken to inculcate population awareness in school children. Five UNICEF projects are progressing in to innovate (1) comprehensive access to primary education; (2) nutrition, health education and environmental sanitation; (3) primary education curriculum renewal; (4) developmental activities in community education and participation; and (5) children media laboratory/ early childhood education.

Community singing has been launched as a national movement for encouraging school children to sing together to inculcate national integration. School text books are evaluated from the viewpoint of quality and promotion of national integration. Research conducted by NCERT paved the way for reforming the public examinations and making them more objective, reliable and valid.

National Policy on Education, 1968 has been revised after 20 years to bring out new Education Policy in 1986 with emphasis on educational technology, value orientation and national integration. A new national curriculum framework has been adopted to introduce a common scheme of studies and core curriculum. A massive programme for orientation of school teachers has been undertaken to familiarise them during summer vacation with (i) the National Policy on Education, 1986; (ii) national curriculum framework; and (iii) educational technology.

NCERT conducts and sponsors research. It undertakes training programmes at national and international levels and offers consultative services on various aspects of school education. The four regional colleges of education undertake programmes related to innovative pre-service and in-service training of teachers.

The Council brings out four journals, viz. Indian Educational Review (quarterly); Journal of Indian Education (bi-monthly); School Science (quarterly); and the Primary Teacher (quarterly); the Bhartiya Adhunik Shiksha (quarterly) and Primary Shikshak (quarterly) are also published in Hindi.

Every year the Council awards 750 scholarships to students on the basis of a national talent search examination. The successful candidates are awarded scholarship to pursue studies upto Ph.D. level in science, mathematics and social sciences or professional courses in areas like engineering and medicine.

Scholarships

The Department of Education administers a number of scholarship programmes including those offered by other countries providing facilities for higher and specialised education and training to Indian students. The department also provides scholarships to nationals of other countries on a bilateral basis or otherwise.

The national scholarship scheme started in 1961-62 on merit-cum-means basis is being implemented through the state government and union territory administrations. For 1986-87, the number of scholarships given is 27,000. For 1987-88, the number of scholarships has been raised to 40,000.

The national loan scholarship scheme is in operation since 1963-64. This is also implemented through the state governments and union territory administrations. The number of fresh scholarships is 20,000 per annum.

Scheme of scholarships in approved residential secondary schools was started in 1953-54 and is

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being administered directly. Five hundred scholarships are awarded every year to students of the age group 11-12 whose parental income does not exceed Rs. 50 per month.

The scheme of scholarships to students from non-Hindi speaking states for post-matric studies in Hindi, operative since 1955-56, is being implemented through non-Hindi, speaking states and union territories. Since 1979-80, every year 2,500 scholarships are given under this scheme.

Under general cultural scholarship scheme, started in 1949-1950, the Government awards a certain number of scholarships each year to nationals of selected African, Asian and other developing foreign countries for graduate, post-graduate courses in engineering, technology, management, medicine, pharmacy and general courses against reserved seats in Indian institutions and universities. Scholarships are tenable for the period necessary for the students to acquire the degree, diploma or certificate course for which they are selected. The scheme has been evolved to promote friendly relations between India and foreign countries and to provide all such facilities for higher education and training as are not available in their respective countries. Applications are invited through Indian missions abroad from the selected countries and only those students are considered who are recommended by their own countries through Indian Missions.

Under self-financing scheme the self-supporting foreign students are also considered for admission to B-Pharmacy course against reserved seats in Indian institutions.

Under the scholarship/fellowships for the nationals of Bangladesh, 110 scholarships (including 10 for Sanskrit and Pali) are awarded every year to the nationals of Bangladesh. The value of a scholarship is practically the same as in the case of the general cultural scholarships scheme.

Scholarships at the secondary stage for talented children from rural areas are being administered through the state governments and union territory administrations. The aim is to develop the potential talent of rural areas and educate them in good neighbourhood district schools. Under the scheme, the scholarships begin at the middle stage and cease at the end of secondary stage including plus-two stage of education. Thirty-three thousand scholarships in this category have been allocated for 1985-86. During 1986-87, this number was increased to 38,000.

Scheme of scholarships for study abroad, operating since 1971-72, is being administered directly. Scholarships are available in all fields except medical and agricultural studies. Fifty scholarships are awarded every year.

About 400 scholarships/fellowships are offered to the foreign students annually under the Cultural Exchange Programme and Commonwealth Scholarship/Fellowship Plan and other schemes. During 1986-87, about 160 scholars joined different universities/institutions and were awarded the scholarships under these schemes. Scholarships are awarded normally for a period of two years depending on the duration of the course. The scholarships are mainly for post-graduate studies/research.

Books

National Book Trust

The National Book Trust (NBT), an autonomous organisation set up in 1957, functions with the objectives of fostering book mindedness among the people producing good reading material for various age groups at moderate prices. In pursuance of these objectives the Trust has been producing books in Indian Languages and in English in well defined series. Some of the important series are : *India -*

the Land and the People, National Biography, Young India, Folklore of India, Popular Science and World of Today. Since its inception, the Trust has brought out 3,247 titles under these series. Besides, the Trust has two major publishing programmes for national integration, namely, *Aadan Pradan* and *Nehru Bal Pustakalaya* series. More than 654 books have been published in *Aadan Pradan* series and about 1,248 titles in *Nehru Bal pustakalaya*.

The Trust organises book fairs and book festivals at international, national and regional levels. It has so far organised seven world book fairs, all in new Delhi; 13 national book fairs; 9 regional book festivals and about 120 regional book exhibitions. The 13th National Book Fair was held in Trivandrum in January 1987 and the 8th World Book Fair is scheduled to be held again at New Delhi from 5 to 15 February 1988.

To encourage indigenous authorship, the Trust is operating a scheme of subsidised publication of University level books written by Indian authors with view to making these available to the students at reasonable prices.

The total number of books subsidised till 31 March 1987 is 773. The scope of this scheme has been extended to cover books in Hindi and Indian languages as well as polytechnic books. The Trust also organises seminars, symposia and training courses for writers, publishers, booksellers, etc.

Export of Books

India is one of the ten major book producing countries of the world and ranks third in production of English titles. To promote sale of Indian books and translation rights abroad, and for securing printing jobs from abroad, steps are being taken to publish books through participation in international book fairs and organisation of special exhibitions of Indian books, by conducting market studies and commercial publicities through circulation of annotated catalogues, brochures, etc.

During 1985-86, India exported books, including periodicals and journals worth Rs. 25 crore.

Import of Books

Import of educational, scientific and technical books and journals, news magazines and newspapers are allowed under Open General Licence (OGL). Dealers with a turnover of books valued at Rs three lakh or more are eligible to apply for import licence on the basis of 10 per cent of their purchase turnover for the import of books other than those covered by OGL.

National Educational Resources Centre

The Raja Rammohan Roy National Education Resources Centre was established in 1972 as a part of the Book Promotion Division with the main objective of promoting writing and production of indigenous university level books. It aims at serving authors and publishers of university level books as well as research workers in the field of book production by way of intensive and extensive reference work and documentation services, and through its various book promotional activities, viz., organisation of exhibitions of university level books in various universities by rotation, providing free publicity to indigenous university level publications and creating awareness among the teachers and students about the presence of standard university level books, "On-the-Spot" evaluation of indigenous university level books by panels of subject experts for possible recommendations to universities, conducting sample surveys, documentation and statistical analysis of imported books with a view to ascertaining the patterns or trend of book imports in order to formulate a meaningful import policy of

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reading material. It is the sole agency bringing out a national catalogue of university level books, the first of its kind in India. The Centre acts as a data bank for university level text-books and also as a Text-book Research-cum-Information Centre. It has a large number of indigenous university level books as well as subsidised editions of books published under the Indo-British, Indo-american text-book collaboration programmes. Besides, it brings out bibliographies, newsletters, etc., on various topics of interest to meet the demands of authors, research scholars and publishers.

The Centre has been designated as the national agency for the operation of International Standard Book Numbering System in India (ISBN). More than 300 publishers have been registered with the agency so far, using ISBN on their publications. The system has been introduced to boost the exports of indigenous books and minimise the procedural delays in the book trade.

National Book Development Council

The National Book Development Council was revived in September 1983. It was earlier known as the National Book Development Board which functioned from 1967-74. The Council is a representative body of different interests connected with books and its functions, inter-alia, are (i) to lay down guidelines for the development of book industry in the context of overall requirements of the country; (ii) to foster book mindedness; (iii) to encourage authorship, particularly in Indian languages and suggest measures for safeguarding the interest of the author; and (iv) to draft a national book policy.

Copyright

Copyright protection is governed by the Indian Copyright Act, 1957 which came into force in 1958. A copyright office has been set up under the provisions of the Act to register works in which copyright exists so that the owners of copyright in such works can have a prima-facie evidence of their ownership under the Act. A copyright board with powers of adjudication in copyright disputes has also been set up.

India is a member of two international conventions on copyright, namely, the Berne Convention (1948) and the Universal Copyright Convention (1952). Both these Conventions were revised at Paris in 1971, whereby special concessions were given to the developing countries to enable them to issue compulsory licences for reproduction/translation of books of foreign origin for educational purposes. The Indian Copyright Act, 1957 was amended in 1983 with the specific purposes of (a) incorporating the provision of the Paris Text of 1971 of the Berne Convention and Universal Copyright Convention concerning grant of compulsory licence for translation and reproduction of foreign works required for educational purposes; (b) providing adequate protection to author's right; and (c) removing administrative drawbacks and other lacunae experienced in the administrations of the Copyright Act, 1957. The Copyright (Amendment) Act, 1983 came into force with effect from 9 August 1984.

The Copyright Act was further amended in 1984 in order to check the problem of widespread piracy in the country. The Copyright (Amendment) Act, 1984 has been enacted and necessary provisions have been made to combat piracy by making punishment for various offences more stringent. Infringement of copyright has been made a cognizable offence. The Act provides for enhanced punishment for the infringement of copyright, namely, imprisonment upto three years, with a minimum punishment of imprisonment of six months and a fine upto Rs two lakh with a minimum of Rs. 50,000. The Act came into force with effect from 8 October 1984.

Promotion of Languages

The policy of the Government is to encourage the development of all Indian languages including classical, modern and tribal. Programmes are undertaken to achieve the desired objectives with the emphasis on training of teachers in relation to the adoption of three language formula and the production of university level textbooks with a view to media switchover from English to regional languages. Without intending to impose Hindi in any form, support for promotion of facilities for the teaching of Hindi in non-Hindi speaking states is provided and financial assistance is given for the appointment of Hindi teachers in their schools, establishment of Hindi teacher training colleges; award of scholarships to students in these states for the study of Hindi beyond the matriculation stage, assistance to voluntary Hindi Organisations to enable them to hold Hindi teaching classes; conducting research on the methodology of its teaching and providing Hindi books to various organisations. For promotion and development of tribal, classical and modern Indian languages, number of schemes for preparation/publication of books, dictionaries, research and instructional material, training of teachers, etc., are being implemented.

Hindi

Through the Kendriya Hindi Sansthan, Agra, the Government promotes the development of improved methodology for teaching Hindi to non-Hindi speaking students, preparation of suitable teaching materials and development of improved teaching methods. Through the Central Hindi Directorate the Government runs programmes relating to the purchase/publication of Hindi books and their free distribution in non-Hindi speaking states in India and missions abroad; Hindi teaching correspondence courses through the medium of English, Tamil, Malayalam and Bengali for foreigners and non-Hindi speaking students; preparation/publication of terminology/bilingual/trilingual dictionaries, etc.

The Commission for Scientific and Technical Terminology (CSTT), New Delhi has been assigned the task of preparation and publication of definitional dictionaries/terminology in various disciplines, Pan-Indian terminology, Hindi-English glossaries in basic sciences, humanities, social sciences and applied sciences, production of university level books in agriculture, engineering including polytechnic, veterinary sciences, forestry, medical sciences, including nursing and para-medical and pharmaceutical sciences.

Grant-in-aid to voluntary Hindi organisations working in the field of Hindi in non-Hindi speaking states/union territories and other states/union territories are released for propagation and development of Hindi.

In order to assist non-Hindi speaking states/union territories to effectively implement the three language formula, financial assistance for appointment of Hindi teachers for upper primary, middle, high and higher secondary schools are also sanctioned.

Financial assistance for setting up Hindi teachers' training colleges in non-Hindi speaking states/union territories is being sanctioned under another centrally sponsored scheme. The grant-in-aid is provided mainly to assist the consolidation and further development of Hindi teachers' training colleges in non-Hindi speaking states/union territories and to a limited extent, to assist the setting up of a new institution in such of the non-Hindi speaking states/union territories as are in need of such assistance.

There is a provision of 50 scholarships every year to the students of foreign countries for study

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of Hindi in Cental Hindi Institute, New Delhi. In oder to provide material in Hindi in foreign countries where there is a sizeable population of Hindi speaking residents, Hindi books are supplied for setting up Hindi libraries in missions abroad. Hindi typewriters and other equipments are also supplied. Hindi scholars are sent abroad for propagation of Hind under cultural exchange programmes.

Modern Indian Languages

Under the scheme for development of modern Indian languages, the Government gives financial assistance to voluntary organisations for bringing out publications like encyclopaedias, dictionaries, books of knowledge and of scientific interest. Grants are given for holding literacy conferences, seminars are exhibitions for development of Indian languages. Assistance is also given by way of purchasing copies of printed publications. State governments are given special help for the production of university level books in regional languages.

The Bureau for Promotion of Urdu (BPU), a subordinate office in the Department of Education, was set up in 1969. Apart from working as Secretariat to the Taraqqi-e-Urdu Board which is the highest advisory body to advise the Government on the development of Urdu, the Bureau for Promotion of Urdu develops educational literature in Urdu. The Bureau has established 31 calligraphy centres, where instruction is given to students in Kitabat. Of these 31 centes, four have been specifically set up for women and three for training in decorative calligraphy.

The Government also provides facilities for the study of languages other than the mother tongue. For this purpose the Central Institute of Indian Languages, Mysore is charged with the reonsibility of coducting research in the areas of language analysis, language pedagogy, language technology and language use. The study of tribal language is one of its important functions. By now, the Institute has taken up 57 tribal and border languages/dialects for linguistic description and material production. The Institute supports five regional language centres one each at Bhubaneswar, Mysore, Patiala, Pune, Solan and Lucknow to help meet the demand for trained teachers to implement the three language formula and give assurance to the linguistic minorities.

English and Foreign Languages

The Central Institute of English and Foreign Languages, Hydeabad was set up by the Government in 1958 as an autonomous organisation with the objective of bringing out qualitative improvement in the teaching of English in the country. Subsequently it expanded the field of its activities to include the teaching of major foreign language viz, Russian, German, French and Arabic and their literatures. In 1973 it was declared to be an institution of higher learning deemed to be university under the University Grants Commission Act. It has two regional centres, one at Shillong and the other at Lucknow.

With a view to improving the standard of English language teaching and learning in India, Several measures are being taken up. Financial assistance is provided to the state governments for setting up of district centres for English. These centres aim at imparting training to teachers of English in their areas through orientation courses, followed by long term professional support and guidance through correspondence programmes. A scheme of financial assistance to state English language teaching institutions is also envisaged with a view to strengthening their programmes of training.

Sanskrit and Other Classical Languages

There are many schemes for the propagation, popularisation and development of Sanskrit education

and also other classical languages like Arabic and Persian. The Main activities include financial assistance to voluntary Sanskrit organisations, development of some of the institutions run by voluntary organisations into Adarsh Sanskrit Pathshalas with enhanced financial assistance, employment of professors, younger teaches, financial assistance for publication of original writings of contemporary authors, editing and publication of rare manuscripts and catalogues of manuscripts, reprinting of important out-of-print Sanskrit texts, promotion of oral vedic tradition, vocational training to production of Sanskrit pathshalas, national awards to eminent scholars and preparation and publication of Sanskrit dictionaries.

Registered organisations engaged in development and propagation of Sanskrit are given recurring and non-recurring grants for salary of teachers, scholarships to students, construction and repair of buildings, library books, research projects, etc., to the tune of 75 per cent of the approved expenditure. During 1986-87 about 650 voluntary institutions conducting courses on traditional Sanskrit education have benefitted by this scheme.

Institutions having potential for greater development are identified and are brought under the scheme of Adarsh Sanskrit Pathshalas/Shodh Sansthan and such institutions are assisted.

Under the scheme of Certificate of Honour of Sanskrit Arabic and Persian scholars, 10 eminent Sanskrit scholars and two each in Arabic and Persian are honoured by the President every year. They are also given monetary grant of Rs. 5,000 per year for their life time. Till 1986-87, 244 scholars have been awarded this honour,

The Department of Education also conducts an all India Vedic convention and all India Sanskrit elocution contest in different parts of the country every year to popularise Sanskrit, where about 100 scholars in different Shastras are invited with a view to identifying the rare Vedashakhas and their repositories and also to devise ways and means of preserving the oral tradition.

Rashtriya Veda Vidya Pratishthan has been set up with the objective to preserve, conserve and develop the oral tradition of Vedic recitation for which the Pratishthan will undertake various activities such as supporting traditional Vedic institutions and scholars, providing fellowships, scholarships, etc.

In order to enhance employment possibilities of students passing out of Kendriya Sanskrit Vidyapeeths and other traditional Sanskrit institutions, a new scheme has been introduced from 1982-83 to provide short-term vocational training to these students in subjects allied to Sanskrit studies, namely, ritualogy, epigraphy, manuscriptology, Sanskrit printing and composing etc. For conducting these courses 16 institutions were given cent per cent grant during 1986-87.

During 1986-87 about 150 registered voluntary organisations working in the field of classical languages. Arabic and Persian were given financial assistance towards salary, scholarships, furniture, library, etc. A major research project for bringing out a critical edition of 'Fatwa-Al-Tar Khania' a monumental work on Islamic law, has been sponsored by the Department of Education. The project is to be completed in 10 years.

Under the Shashtra Chudamani scheme, young scholars are given dept coaching in the Kendriya Vidyapeeths Adarsh Sanskrit Pathshalas, etc., in various disciplines by utilising services of eminent elderly scholars. These scholars are appointed on a monthly honorarium of Rs. 1,000.

Similarly there are 25 institutions in the country which are given 95 per cent grant for popularising vedic education. The Government is also providing financial assistance to eight Veda units which are engaged in the preservation of oral tradition of vedic recitation.

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The Rashtriya Sanskrit Sansthan, an autonomous organisation under the Ministry of Education, with its headquarters at Delhi, exercises academic and administrative control over eight Kendriya Sanskrit Vidyapeeths situated at Delhi, Jammu, Allahabad, Tirupati, Guruvayoor, Puri, Jaipur and Lucknow, where post-graduate Sanskrit education on traditional shastras and research in various fields are conducted. Besides, 43 institutions in the country are affiliated to it for purposes of examination. The Sansthan conducts examinations right from Prathma to Vidyavaridhi and Vachaspati (Ph. D. and D. Litt.) respectively.

The Government is assisting contemporary authors of Sanskrit works in publishing their books. The assistance has since been increased from 60 per cent of 80 per cent of the approved expenditure. Research institutions and established departments of universities are also assisted to prepare and publish critical editions of rare manuscripts and also catalogues of Sanskrit manuscripts. During 1986-87, 33 publications, 13 catalogues and critical editions were published with Government assistance. Assistance ranging from Rs. 1,500 to 10,000 has been given to the editors of 25 Sanskrit journals for improving their quality and contents.

A programme has been launched from 1982-83 to bring out reproduction of important out-of-print Sanskrit books by photo-off-set process at reasonable prices through commercial publishers. Under this programme about 100 publications have come out so far.

The old eminent Sanskrit scholars indigent circumstances are being helped to the extent of Rs. 3,000 per annum minus their personal annual income. 1,662 scholars all over the country received this assistance during 1986-87.

Physical Education and Yoga

Recognising the importance of physical education and sports, the National Policy on Education, 1986 declares that sports and physical education are an integral part of the learning process and also recognises the need for building up a nation-wide infrastructure for physical education, sports and games consisting of play fields, equipments, coaches and teachers of physical education as a part of the schools improvement programme. In consonance with the National Sports Policy, the New Policy enjoins upon the Central and state governments to promote and develop indigenous, traditional and modern games and sports and also yoga by providing facilities and infrastructure on a large scale.

Cultural Activities

The composite culture of India is essentially an expression of the inner urges and cumulative beliefs of its people gathered through centuries of experience. It is the perennial flow of this cultural stream which determines the nation's strength, its character and its capacity to survive as an integrated living reality despite heavy odds and its continuous march forward on the path of progress. Keeping this in view, preservation of the cultural heritage of the country, inculcation of art consciousness among the people and promotion of high standards of creative and performing arts and dissemination of culture, have been made a part of the objectives of the state policy.

The Central and state governments strive for the promotion and dissemination of art and culture through national and regional academies of art, dance, drama, music and letters. Zonal cultural centres have been set up in different regions of the country for projecting, presenting and sustaining the cultural kinship that transcends territorial limits. In addition, the Indira Gandhi National Centre for Arts is being set up at New Delhi as a resource centre and data base encompassing all arts. All these institutions

and the Department of Culture at the Centre are helped in their objective by the media of mass communication and voluntary agencies. Apart from this, some eminent persons associated with the fine arts, are from time to time, nominated by the President to the Rajya Sabha in recognition of their attainments in their fields.

Visual Arts

Painting

Important traditions of Indian painting including the murals of Ajanta, Ellora and other frescoes, the Buddhist palm leaf manuscripts, the Jain texts, the Deccan, the Mughal, the Rajput and the Kangra schools. The Bengal renaissance and the modern trends bring it to the present. While the modern trends in Europe and elsewhere have influenced modern Indian painting, Indian folk art and themes have been successfully revived and accepted.

Architecture and Sculpture

Till the advent of modern trends, architecture and sculpture in India were inspired mainly through the religious motif. The best examples are the temples, mosques, fortresses, palaces and other monuments which dot the Indian landscape. Massive buildings that have come up after Independence and the city of Chandigarh symbolise the beginning of the modern period of Indian architecture. Contemporary Indian sculptors have contributed substantially to the creation of a new awareness of mass, volume and space.

Lalit Kala Akademi

To promote the understanding of Indian art, both within and outside the country, the Government established the Lalit Kala Akademi (National Academy of Fine Arts) in 1954. The Akademi strives to promote this objective through exhibitions, publications workshops and camps. Every year it holds a national exhibition and every three years, the Triennale-India, an international exhibition.

The Akademi has brought out a series of monographs and portfolios on ancient Indian art and publishes a bi-annual art journal Lalit Kala Contemporary.

The Akademi organises artists camps, seminars and lectures and gives grants to recognise art organisations in the country. It honours eminent artists by electing them as Fellows. So far 31 persons have been conferred Fellowships. Ten awards of Rs. 10,000 each are given to artists on the occasion of the national exhibition.

The Akademi has a permanent artists' studio complex with facilities for training and practice in painting, ceramics, graphics and sculpture at Garhi, New Delhi and Calcutta. It has regional centres at Madras and Lucknow, where facilities for practical training and work have also been provided. Another regional centre is coming up at Bhubaneswar.

In memory of Dr. Ananda Coomaraswamy (1877-1947), the Akademi organises a lecture annually.

Performing Arts

Music

There are two main schools of classical music, namely, Hindustani and Carnatic, Both schools continue to survive mainly through an oral tradition being passed on by the teacher to the disciple and this has led to the existence of family traditions called the gharanas and the sampradayas.

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In recent years there has been a great revival of interest in folk and tribal music, which has been brought to the stage in cities. Growing in popularity is another category of music, which has come to be known as light music.

The patronage to music is both state-supported and popular. The Sangeet Natak Akademi (National Academy of Music, Dance and Drama), All India Radio, Doordarshan, films, voluntary organisations and cultural associations are the main agencies that have brought about a nationwide awareness and appreciation of music.

Dance

Dance in India has an unbroken tradition of over 2,000 years. Its themes are derived from mythology, legends and classical literature. There are two main divisions of Indian dance, namely, classical and folk. Under classical are those dance forms, which are based on ancient dance discipline and have rigid rules of presentation. Among the leading forms of classical Indian dance are Bharat Natyam, Kathakali, Kathak, Manipuri, Kuchipudi and Odissi. Bharat Natyam has roots in Tamil Nadu. Kathakali is the dance-drama of Kerala. Kathak is the principal classical dance of north India and was revitalised as a result of the fusion of Mughal influence with Indian culture. Manipuri, in the eastern region, has contributed a delicate, lyrical style of dance. Kuchipudi, is a dance-drama from Andhra Pradesh. Its themes are culled from the epics, the Ramayana and Mahabharata. Odissi from Orissa, once practised as a temple dance, is today widely interpreted by artists. The folk and tribal dances of India are of numerous patterns.

Both the classical and folk dances of India owe their present popularity to institutions like the Sangeet Natak Akademi and training institutes and cultural organisations in different parts of the country. The Akademi gives financial assistance to cultural institutions for training in different forms of dances. To promote advanced study and training in different forms of dance and music, especially those which are rare, the Akademi awards Fellowships to scholars, performers and teachers.

Theatre

Theatre in India is as old as her music and dance. The classical theatre survives only in a few parts of the country. The folk theatre can be seen in its regional variants in practically every linguistic region. There is also the professional theatre, which is mainly city-oriented. Besides, a rich tradition of puppet theatre is found in various parts of the country. Among the many forms prevalent are the puppets, rod puppets, glove puppets and leather puppets (shadow theatre).

There are several semi-professional and amateur theatre groups active in many big cities, performing plays in Indian languages and in English.

Sangeet Natak Akademi

The Sangeet Natak Akademi—the national academy of music, dance, and drama was set up in 1953 for the furtherance of the performing arts of India, a task in which it co-operates with counterparts in the states and voluntary organisations all over the country. Through sponsorship, research and dissemination, it seeks an enhanced, public appreciation of music, dance and drama, together with a quickened exchange of ideas and techniques for the common gain of Indian performing arts. As part of its coordinating and promotional activities, it holds seminars and festivals, presents awards to outstanding performing artists, gives financial assistance for theatre productions, extends financial help to traditional

teachers and grants scholarships to students. It operates a scheme of interstate exchange of troupes to promote national integration for dissemination of culture. It also supports regional festivals to bring rare art forms of the region to the fore and to promote cultural integration.

In view of the many theatrical, musical and dance forms prevalent in the country, the Akademi has set up a special unit for surveying and documenting them. Its disc and tape library has the largest collection of Indian classical, folk and tribal music and dance and theatre items.

The Akademi is running two national institutions for imparting training in dance. These are the Kathak Kendra, New Delhi and the Jawaharlal Nehru Manipur Dance Academy, Imphal. The Academy has been helping in the resurgence of the puppet theatre in the country.

The Akademi operates a scheme under which subsidy is given for publication of books in various Indian languages and in English on music, dance and drama. It honours outstanding performing artists and schools by conferring fellowships and annual awards.

National Schools of Drama

The National School of Drama, a premier theatre Institute for theatre training leading to a 3-year Diploma Course, was set up in 1959 and is fully financed by the Government of India. Since 1975 it is functioning as a registered society. The School has internationally known visiting faculty comprising directors, designers and teachers and is linked with parallel institutions throughout the world through cultural exchange programmes.

The Repertory Company, a performing wing of the school, performs the best of the world dramatic literature both in India and abroad. The School promotes research in theatre and under extension programmes conducts intensive theatre training programmes both for children and adults in various parts of the country. The School is starting regional centres with one year integrated certificate courses in theatre.

Broadcasting

The All India Radio has been contributing to bring about an awareness and appreciation of Indian music--classical, light classical, folk and tribal. It has many national programmes to propagate music. The Vividh Bharati service broadcasts popular film and light music.

Literature

Rediscovery of ancient and medieval Indian literature and development of modern literature in the major Indian languages and in English mark the literary activities in present-day India. A large number of literary periodicals and magazines, literary institutions and the All India Radio have given impetus to the growth of modern Indian literature.

Sahitya Akademi

The Sahitya Akademi (National Academy of Letters) was set up by the Government in March 1954, for the development of Indian letters and to set high literary standards to foster and coordinate literary activities in all the Indian languages and to promote through them the cultural unity of the country.

Some of the main functions of the Akademi are translation of literary works more specially its award winning books from one Indian language to another and from non-Indian to Indian languages, publication of works on literary history and criticisms, books of reference like bibliographies and

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biographies and works in Devanagari and other Indian scripts and popularisation of the study of literature among people. The Akademi has regional offices at Bombay, Calcutta and Madras.

An important publication of the Akademi is the National Bibliography of Indian Literature (1901-1953) in four volumes covering books of literary merit in all the major Indian languages and in English published in India or written by Indian authors. These cover English and all the major Indian languages except Dogri, Konkani, Maithili, Manipuri, Nepali and Rajasthani for which a fifth volume is under preparation.

It publishes a bi-monthly journal in English, Indian Literature; a quarterly in Hind, Samakaleena Bharateeya Sahitya and a half-yearly in Sanskrit, Sanskrita Pratibha.

The Akademi has sponsored two series of publications; first, Histories of Literature of various Indian languages and the second, a series of monographs entitled Makers of Indian Literature with a brief biography and literary assessment of writers from all over the country, from the earliest times of the present day.

The Akademi is now compiling a detailed Encyclopaedia of Indian Literature with the help of over 1,000 writers belonging to the 22 recognised languages.

The Akademi honours eminent men and women of letters by electing them its Fellows. It also awards annual prizes to works of outstanding merit in English and in other Indian languages.

Fellowships and Financial Assistance

To provide basic financial support to outstanding persons for creative work in various fields of the performing, plastic and literary arts in the age group 25-65, 15 senior fellowships and 35 junior fellowships of the value of Rs. 1,000 and Rs. 500 respectively per month, each tenable for two years, are being awarded every year since 1979-80. These fellowships are given for specified schemes and projects suggested either by the artists themselves or selected at the initiative of the Government.

Ten eminent artistes who have achieved high degree of excellence and have acquired national/international fame but have since retired from professions are awarded fellowships of the value of Rs. 2,000 per year for continuing experiments in the field of performing, literary and plastic arts.

Persons distinguished in letters, arts and such other walks of life, who are above 58 years of age and have an income of less than Rs. 1,000 a month, are considered for grant of financial assistance up to Rs 600 a month.

Encouragement to Artistes

Young artistes of outstanding promise in the age-group 18-28 are awarded 75 scholarships every year for advance training in music, classical forms of Indian dances, traditional theatre, drama, painting and sculpture. A scholar gets Rs. 400 a month for two years.

Archaeology

The Archaeological Survey of India (ASI), founded in 1861, the leading institution in the field of archaeological research and activities, conducts programmes of large scale problem oriented exploration and excavation of prehistoric, protohistoric and other ancient sites, as also the architectural surveys, landscaping around monuments, chemical preservation of sculptures, monument and museum objects, epigraphical research, maintenance of 31 archaeological museums located near ancient sites and group of monuments, publication of archaeological and epigraphical periodicals and books, etc. It also

carries out preservation work of monuments and sites abroad.

The landmark of the Indian archeology is the discovery of the Indus Valley Civilization in 1921. After the partition, practically all the Harappan sites went over to Pakistan but the systematic work of the ASI made it possible to discover many Harappan sites along the riverbed of the Saraswati and the western coast. The most important sites excavated since 1947 include Lothal, Kalthangan, Ropar, Surkotada, Banawali, Hulas, Daimabad. The northern limit of the Harappan culture is Manda in Jammu and Kashmir and the southern limit is Diamabad in Maharashtra.

The Indian archaeologists could bridge the gap once known as the 'Dark period' of Indian History through the discovery of the neolithic and chalcolithic cultures in different parts of India. For the first time an aceramic level of neolithic culture has been encountered at Gutkral in the Kashmir Valley. From the valley of river Tista and its tributaries in Sikkim have been brought to light a variety of tools including contact with South China. The recent excavations at Taradih in South Bihar and Banahalli in Karnataka have brought to light neolithic cultural deposits in the earliest levels. The most important discovery of the Banahalli excavations is a terracotta model of a plough. Explorations in Orissa brought to light white and ochre painted black and red ware along with the neolithic celts from sites like Asurgadh, Manunda and Golbai.

Notable discoveries of the recent years include charming pieces of sculptured rainlings of a Buddhist Stupa datable to the early Kushana period from Sanghol in Punjab; a 200 m long tank of burnt brick, constructed around the beginning of the Christian era from Sringaverapura, a Ramayana site in Uttar Pradesh and Sravasti, a Buddhist site also in Uttal Pradesh; Buddhist 'stupa from Udaigiri and gold and silver caskets from Lalitgiri in Orissa; terracotta plaques from Samshunder Tila, Tripura; Roman Gold coins from Akki Alur in Karnataka and Sannati, a Buddhist site also in Karnataka; bronze images from Darasuram in Tamil Nadu; an artistically built ashlar masonry tank with skillful arrangement for supply of water at Hampi in Karnataka.

Ancient remains and archaeological monuments more than five thousand in number, which are protected under law as monuments of national importance, are looked after by the Archaeological Survey of India while those not of national importance are maintained by the state departments. The key preservation works undertaken by the ASI include monuments at Hampi, Karnataka; Gwalior Fort Complex, Madhya Pradesh; Hazardwari Palace, Murshidbad, West Bengal; Lord Jagannath Temple Complex, Puri and Sun Temple at Konark, Orissa; Fort at Bhatinda in Punjab; Humayun's Tomb Complex and Qutab Complex in Delhi; Thousand-Pillared Temple, Hanamokonda in Andhra Pradesh; Monument at Sasaram, Bihar; Buddhist Monastery, Alchi in Jammu and Kashmir; Taj Mahal and Agra Fort, Agra in Uttar Pradesh; Ajanta Caves in Maharashtra and Churches at Old Goa, in etc. The horticultural operations at Delhi, Agra, Bhubaneshwar, Konark and Goa and worth reference.

Indian expertise in the field of structural and chemical preservation is an acknowledge fact. The conservators' teams from the ASI were sent to Kampuchea and Bhutan. A team was sent to Maldives Island for excavation and exploration of the Buddhist sites under the aegis of the South Asian Association for Regional Cooperation (SAARC).

The task of implementation of Ancient Monuments and Achaecological Sites and Remains Act, 1958 and the Antiquities and Art Treasure Act, 1972 is also carried out by the Archaeological Survey of India. Under the Antiquities and Art Treasure Act, 1972, any object which is more than one hundred years old (75 years in case of manuscripts, documents and the like) having artistic an

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archaeological interest, cannot be exported without a valid permit from the Archaeological Survey of India. A permit is also required for the export of works of art of some of the renowned artists which have been declared as art treasures under this act. At all international exit points an expert advisory committee functions to issue non-antiquity certificates. The scheme of registration of sculptures and paintings in all media, besides illustrated, painted or illuminated manuscripts which are more than one hundred years old, is also in operation. This Act also requires that the trade in antiquities is to be carried out by persons duly licensed by the licensing officers of the Archaeological Survey of India. As per the provisions of the Ancient Monuments and Archaeological Sites and Remains Act, 1958 and Rules 1959, permission is required for filming and photographing with stands at centrally protected monuments and museums while no archaeological excavation can be carried out anywhere in India without a licence issued by the Director General, Archaeological Survey of India.

The Archaeological Survey of India conducts a two year Post-Graduate Diploma Course in Archaeology in the Institute of Archaeology which has attracted students from neighbouring countries as well. Besides the research programmes, the Institute has short term courses in conservation and epigraphy.

The Archaeological Survey of India is also maintaining 31 archaeological museums located near ancient sites and monuments.

The publication wing of the Survey has published certain important report including Lothal volume II, Excavation at Satanikota, Excavation at Daimabad and Excavation at Nagda. The annual publication 'Indian Archaeology 1983-84--A Review' has been brought out. Certain guide books have also been published.

The Archaeological Survey of India has a library which is one of the oldest in the country. It contains rare books and journals not only on India but also on South-East Asia and West Asia. There is a separate library of photographs apart from a study collection of ancient ceramics of Indo-Pak sub-continent.

Marine Archaeology

A Marine Archaeology Unit was set up in the National Institute of Oceanography, Goa, with a view to exploring and excavating submerged ports and sunken ships. The project supported by the Department of Science and Technology, undertook offshore survey of the legendary city of Dwarka on Gujarat coast, allegedly built by Sri Krishna and subsequently submerged under the sea. Underwater excavation in the ancient harbour seaward of the Temple of Sea God (*Samudranarayana*) brought to light a submerged structure of massive building blocks corroborating the findings of onshore excavation in which three temples (1st-9th century AD) and two townships (10th and 15th century BC) were found destroyed by the sea. Offshore exploration of Bet Dwarka, an island settlement off Port Okha, associated with Sri Krishna's legend, yielded conclusive evidence of the submergence of a 15th-14th century BC town. A massive wall *in situ* in 3.6 metre water depth at high tide is found built on a wavecut bench. Among important protohistoric antiquities recovered from underwater excavation, mention may be made of a unique late Indus Valley seal and an inscribed jar mentioning the Sea God and Seeking his potecion.

Marine records of the State and National Archives were examined and particular of 200 shipwrecks in Indian waters were noted. Among them 30 wrecks are of historical significance. It is proposed to explore and excavate a couple of them. Shipwrecks in Sri Lanka, Mauritius and Malaysia

water also find mention in these records. The twin objective of marine archaeological investigations is to reconstruct the history of maritime trade, ship-building and cultural migrations and to furnish data useful to sedimentologists and naval architects in dating the samples and ascertaining the coastal erosion.

Further excavation 600 m seaward of Dwarka brought to light a submerged stone-built jetty and triangular stone anchors with three holes closely resembling those found in Ugarit (Syria) and Kition (Cyprus) in 1300 BC levels; Dwarka anchors also belong to the same period. The ancient city of Dwarka is found to have extended over 2 km upto Rupen. The city of Bet Dwarka (Shankhodara) was 4 km long as attested by the submerged walls *in situ* near Balapur Bay. It is now obvious that the second urbanization in India took place during the 15th-14th century BC, a thousand years before the Achaemenid cities came into existence. The iron objects found in Bet Dwarka waters indicate that the iron technology was in a primitive stage.

Excavation in the Arabian Sea 700 m seaward of the temple of sea God brought to light remnants of fortification walls and bastion built of massive limestone blocks confirming thereby that the ancient city of Dwarka was fortified as described in the *Mahabharata*. It is termed a *Varidurga* (a fortress in water). The submerged structures are *in situ* at 6.14 m below Mean Sea Level and the ancient sea level must have been 9 m below the present one. The thermoluminescence date of pottery from the section of the wall is 3,520 years before Present. This date corroborating the archaeological evidence fixes the date of the *Mahabharata* also.

The Marine Archaeology Unit of the National Institute of Oceanography and the Government of Gujarat organised the first Indian conference on Marine Archaeology of Indian Ocean Countries from 12 to 14 October 1987. In all 61 papers from various disciplines were presented by delegates from Indian, UK, USA, Malaysia, Sri Lanka and Mauritius. The conference reviewed the geological, geophysical and archaeological evidence from underwater exploration of Dwarka and came to the conclusion that "there was really a city which got submerged in Dwarka in 1500 BC". The architectural evidence and antiquities such as seal and inscriptions go to indicate that it was the city of *Mahabharata* age.

While Marine Archaeology has given a new dimension to oceanography, the discovery of the legendary city of Dwarka has added a new chapter to Indian history. The data on sea level fluctuation generated by Marine Archaeology is useful for eustatic studies.

The Marine Archaeology Unit discovered a shipwreck 4 km off Mormugao harbour in Goa territory. This steel-hulled ship, about 32 m long is covered by sediment and efforts are being made to identify and excavate the vessel lying buried in 1.5 m thick sediment.

Museums

The museums are repositories of cultural, historical, technical, industrial or other kinds of material for preservation against decay and for transmission to posterity as records for history. They serve as important audio-visual means of education.

The Constitution makes the states primarily responsible for the setting up and maintenance of museums. The government has, however, set up a number of important museums and provides financial assistance for the development of private museums, university museums, etc. Great emphasis is laid on documentation of existing collection in the government and private museums, preservation

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of the collection by using the latest scientific aids and publication of catalogues of collections.

In the field of Indian art and archaeology, the Government has established the National Museum, New Delhi; Indian Museum, Calcutta and Salar Jung Museum, Hyderabad. In the contemporary history and art, Victoria Memorial Hall, Calcutta; National Gallery of Modern Art, New Delhi and the Nehru Memorial Museum and Library, New Delhi are three 'Museums' financed by the Government.

The National Museum, established in 1948, is one of premier museums in the country and its main activities are in the field of acquisition, exhibition, conservation, publication and education. The Museum has been entrusted with the work of coordination of Festival of India in various countries to project the cultural image of India. The Indian Museum, the first museum of the country having been established in 1814, is the most illustrious art and archaeology museum. The Salar Jung Museum has wide range of collection of objects of art. It has more than 7,500 manuscripts in Persian, Arabic and Urdu. The Victoria Memorial Hall is mainly a historical art gallery and contains relics and mementos relating to British period of Indian History covering 1700-1900 AD. This is now being converted into a period museum in which due place is being given to the freedom struggle of the Indian People. Materials are being collected so as to set up an extensive gallery for projecting tribal and peasant movements of the eighteenth and nineteenth centuries.

The National Gallery of Modern Art, set up in 1954, has a collection of over 3,500 works of art representing various styles, spanning more than a century. Among the distinguished Indian artists whose works are in the collection are : Raja Ravi Varma (1848-1906), Rabindranath Tagore (1871-1951), Nandala Bose (1883-1966) Devi Prash Roy Chowdhury (1899-1975), Boinid Behari Mookerjee (1904-1980), Ramkinkar Vaji (1910-1980), Rabindranath Tagore (1861-1941), Gaganendranath Tagore (1867-1938), Jamini Roy (1887-1972), and Amerita Sher Gil (1913-1941). The Gallery arranges special exhibitions of national and international art.

Some of the other important museums are : Indian War Memorial and Archaeological Museum at Red Fort, National Museum of Natural History, Crafts Museum and Rail Transport Museum, all in New Delhi; Asutosh Museum, Calcutta; Sate Museum, Hyderabad; Prince of Wales Museum of Western India, Bombay; Government Museum, Madras; Bharat Kala Bhavan, Varanasi; Municipal Museum, Allahabad; State Museum, Lucknow and Calico Textile Museum, Ahmadabad. There are archaeological museums at ancient sites, e.g., Konark, Amaravati, Nagarjunakonda, Sanchi, Nalanda, Saranath etc. There are also museums of dolls, textile design and for children in places like Delhi, Ahmadabad and Lucknow. A few scientific and technological museums have also been established in Calcutta, Bangalore and Bombay. There are in all 375 museums in the country.

To promote dissemination of culture through museums, a number of programmes have been launched by each Central museum. This includes extension of their educational activities and organising periodically lectures and exhibitions to make people aware of their cultural heritage. A new scheme has been launched in the Department of Culture to promote dissemination of culture through museums. Under this scheme museums are invited to organise on reciprocal basis exhibitions of their art treasure. The Department of Culture undertakes to give financial assistance to cover insurance, transportation, etc., of their art treasure.

The National Museum has undertaken the coordination of Festival of India Exhibitions in the USSR in 1987 in a big way. As many as six exhibitions of Indian Classical Art and Antiquities have

been held in that country. Similarly, the National Gallery of Modern Art has set three exhibitions to the USSR under the Festival of India. The museums in India also expect to receive a number of exhibitions from the USSR. National Gallery of Modern Art is planning to receive a prestigious exhibition from the UK having works of 'Henry Moore'. This exhibition is under circulation to a number of cities including Chandigarh, Bombay, Calcutta and Madras.

The Central Advisory Board of Museums has been revived after a considerable lapse of time. The Board's meeting was held on 8 May 1987. Museologists from museums and universities participated in this meeting. There were useful discussions and deliberations to find out ways and means for greater interaction between university and museums, role of museums in the "New Education Policy, 1987" and participation of people in museum movement in the country.

Training in Museology

Regular degree and diploma courses in museology are being conducted by the universities of Aligarh, Baroda, Bhopal, Calcutta, Pailani and Banaras.

Government organises annually museum camps at different places in the country, a six-week in-service training course as well as the three-month course on conservation of museum materials in the National Museum, New Delhi, and also awards fellowships for training in India and abroad. The National Gallery of Modern Art has since introduced a course in restoration and preservation of art works.

The National Museum has been allowed to strengthen its current in-service training courses of Museology and Conservation of art objects. Apart from this, the National Museum has also been allowed to start courses on History of Art and Appreciation of Art.

In order to give greater chance of training in Museology to museums of northeastern regions also, the Indian Museum, Calcutta has also been allowed to introduce a training course in Museology with effect from 1 January 1987.

National Council of Science Museums

The Department of Culture has set up in April 1978 an autonomous organisation known as the National Council of Science Museums with headquarters at Calcutta to administer : (i) Birla Industrial and Technological Museum, Calcutta; (ii) Visvesvaraya Industrial and Technological Museum, Bangalore; (iii) Nehru Science Centre, Bombay; (iv) Science Centre, Delhi (under progress)--all national level museums/centres; (v) Shri-Krishna Science Centre, Patna; (vi) Regional Science Centre, Guwahati (under progress); (vii) Regional Science Centre, Lucknow (under progress); (viii) Raman Science Centre, Nagpur (under progress); (ix) Regional Science Centre, Bhubaneswar (under progress) all state level centres; (x) District Science Centre, Purulia, West Bengal; (xi) District Science Centre, Gulbarga, Karnataka; (xii) District Science Centre, Dharmapur, Gujarat; and (xiii) District Science Centre, Tirunelveli, Tamil Nadu. The Council also organises multifarious educational activities for children, students, teachers, rural people, house-wives and unemployed youth.

Archives

The records and manuscripts constitute an important part of the rich Indian cultural heritage. These are the major repository of the contribution that our predecessors made in the diverse fields of religion, philosophy, astronomy, literature, history, medicine and science. They constitute the primary

source of reconstruction of India's past. Government has jurisdiction only over libraries established by it and institutions of national importance declared so. However, it takes initiative to secure the voluntary cooperation of the state governments and to promote a coordinated development of national, state and other libraries.

National Archives

The National Archives of India, New Delhi, is the largest and perhaps the best organised record repository in Asia. It has three regional repositories at Bhopal, Jaipur and Pondicherry. It houses several million public records, maps, private papers, microfilms, and a huge volume of books occupying a total length of 30 km of self space. A large number of research scholars from India and abroad are provided facilities for research. The major activities being carried out by the Archives include assistance to the ministries/departments in their record management programmes, acquisition of private papers of national importance and micro-film copies or records of Indian interest from abroad, conducting research for improvement and up-dating of preservation techniques, giving financial assistance to Institutions for preservation/documentation of manuscripts and other holdings of national importance, and creating archival consciousness among the masses through exhibitions, seminars, etc. Besides publishing a bi-annual journal. The Indian Archives and Bulletin of Research Thesis and Dissertations, the Archives also brings out a national register of private records, guides to different series of records and other reference media. Another scheme aims at publishing six volumes of guides to the holdings of the archival institutions in India under a UNESCO sponsored project, Guide to the Sources of Asian History. The Archives runs a one- year Diploma Course and short term courses of eight weeks duration in different aspects of archival science in the School of Archival Studies which is the only institution of its kind in Asia.

Manuscript Libraries

Khuda Bakhsh Oriental Public Library Patna

The Khuda Bakhsh Oriental Public Library, Patna, established in 1891, has the richest collection of Arabic and Persian manuscripts and mughal paintings. The Library was declared an institution of national importance in 1969 by an Act of Parliament. Besides its traditional activities of acquisition and preservation of manuscripts and books, the Library has brought out subjectwise 34 descriptive catalogues of its manuscripts. It also brings out a quarterly research journal. The Library holds annual and extension lectures on various disciplines including current affairs. It has started a project to publish critical editions of rare manuscripts. So far, critical editions of 11 manuscripts including those of unique manuscripts of Diwan-e-Hafiz, Diwan-e-Mushafi, Diwan-e-Mubad have been published. To accelerate the pace of research and publications, the Library has started a five-year programme of holding South Asian Regional Seminars on the relevant subjects of the Library. The Library has also instituted Research Fellowships, Visiting Fellowships and National Fellowships. A Khuda Bakhsh Award has also been instituted on the pattern of Jnanpith and Sahitya Akademi Awards, which will be presented to scholars of repute in the concerned disciplines of the Library.

TMSSM Library, Thanjavur

The Tanjore Maharaja Safojis Saraswati Mahal Library which has its roots in the time of imperial Cholas was taken over by the then Madras Government in 1918. The Library was registered on 9 July 1986 as a Society under the Tamil Nadu Registration Act, 1975. It has a rich collection of about

42,996 manuscripts in Sanskrit, Marathi, Tamil, Telugu and other languages, besides a collection of over 38,368 books in the Indian and European languages covering various disciplines.

Rampur Raza, Library, Rampur

The Rampur Raza Library has a collection of about 15,000 manuscripts besides a large number of miniature paintings, bhojpatras, etc. The holdings of the Library cover nearly all the important oriental languages like Arabic, Persian, Sanskrit, Urdu, Hindi, Pushto and Turkish. The manuscripts in these languages represent all the important subjects. A large number of manuscripts are rare. Besides manuscripts, the printed book section having about 50,000 books also has a unique importance. In this section hundred of rare Arabic, Persian and Urdu books which are now out of print and important for higher research purposes are available. Other attractions of the collection are miniature paintings which are considered immensely valuable for researchers, scholars of Iranian tradition and Indo-Moghul Art style or paintings.

Asiatic Society, Calcutta

The Asiatic Society, Calcutta was found in 1784 by Sir William Jones (1746-1794), eminent indologist, with the objective of inquiring into the history (civil and natural), the antiquities, arts, science and literature of Asia. This 200 year old institution proved to be the fountain-head of all literary and scientific activities in India and the parent of all Asiatic Societies in the world. The Society has a collection of books numbering about 1.75 lakh, some of which are very rare; manuscripts written in about 40 scripts; approximately 24,000 coins; 76 oil paintings; 42,000 inscriptions in Kharosthi script and one Ashokan edict in Brahmi script. The Society is known for its publications which include transactions and journals, Bibliotheca Indica, monographs and various series on proceedings and memoirs and lectures. The Society was declared in March 1984 as an Institution of national importance by an Act of Parliament.

Some of the other important manuscript libraries are : Government Oriental Manuscript Library, Madras; Oriental Research Libraries at Pune and Vadodara; Sanskrit University Library, Varansi, Visheshwaranand Vedic Research Institute Library, Hoshiarpur and Maulana Azad Aligarh Muslim University Library, Aligarh. In Addition, there are over 500 other collections belonging to state governments and private agencies which have thousands of manuscripts.

Libraries

Libraries are the keepers of our history and culture. The development of the library system is an important component of the scheme of non-formal and continuing education. Constitutionally the subject 'libraries' is included in the State list. The Centre has jurisdiction only over libraries established by the Government and institutions of national importance as declared by it. There are more than 60,000 libraries of all descriptions in the country.

The National Library, Calcutta serves as a prominent repository of all reading and information material produced in India as well as for all printed materials written by Indians and concerning India written by foreigners, wherever published and in whatever nature. In addition, it has a rich collection of Persian, Sanskrit, Arabic and Tamil manuscripts and also of rare books. As the repository library is South Asia, it receives materials and documents from United Nations and its agencies. The Library is maintaining exchange relations with 187 institutions in 68 countries.

The Central References Library, Calcutta is responsible for the compilation, publication and sale

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of the Indian National Bibliography. This is a monthly/annual bibliography containing the entries of the current Indian publications in major Indian languages and in English received under the delivery of Books Act, 1954. The library is also compiling and publishing Index Indiana, an annual index to selected articles appearing in current Indian periodical in major Indian languages.

The Delhi Public library established in 1951 with the financial and technical assistance from UNESCO has since developed into a big metropolitan public library system consisting of a central library, 24 branches/sub-branches and community libraries, a Braille library for the blind, 12 Braille mobile service points and seven Braille deposit stations, 32 resettlement colony libraries and reading rooms, two hospital libraries, one central jail library and a network of mobiles service stations serving 57 areas and 17 deposite stations spread all over the Union Territory of Delhi.

The Raja Rammohan Roy Library Foundation, Calcutta, a non-statutory autonomous body, supports and promotes library services in general and public library services in particular all over the country in cooperation with the states and union territory administrations and other voluntary agencies engaged in the field.

Copy Right Libraries

Under the Delivery of Books and Newspapers (Public Libraries) Act, 1954, four libraries are entitled to receive a copy of every new book and magazine published in the country. These are national Library, Calcutta; Central Library, Bombay; Cannemara Public Library, Madras and Delhi Public Library, Delhi.

Other Libraries

There are also specialised libraries providing facilities to researchers. Prominent among them are the Indian Council of World Affairs, New Dehi; Indian Statistical Institute, Calcutta; Gokhale Institute, Pune; Theosophical Society, Madras; National Council of Applied Economic Research, the Indian Institute of Public Adminsitation, and the Central Secretariat Library, all in New Delhi. Apart from these some of the bigger universities also have sizeable collections.

Institutions of Tibetan and other Historical Sutudies

Many centuries ago, Indian scholars took arduous journeys across the Himalayas to Tibet and with them they carried Indian philosophy and throught. The evolution to Tibetan thought and culture was a consequence of this interaction.

At the initiative of Jawaharlal Nehru (1889-1964), a number of Buddhist institutions were started in India. Amongst them were the School of Buddhist Philosophy, Leh, set up in 1959, now renamed as the Central Institute of Buddhist Studies, and the Central Institute of Higher Tibetan Studies, Varanasi. Both are fully financed by the Department of Culture. The main objectives of these institutions are preservation of Tibetan culture and tradition and imparting of studies in ancient and traditional subjects through a modern university framework and conducting research in Tibetan studies. Besides, Government gives grants to Sikkim Research Institute of Tibetology, Gangtok and Library of Tibetan Works and Archives, Dharmasala.

The Institute of Tibetan Studies was established in Varanasi as a constituent wing of Vananaseya Sanskrit Vishwa Vidyalaya. It became a fully autonomous organisation in 1977 and was renamed as the Central Institute of Higher Tibetan Studies. The Institute has a planned programme of training,

research and publication which would bring to light the Tibetan heritage, particularly a body of knowledge of the Indian heritage which was lost to Sanskrit and Pali but was preserved in Tibet.

The Central Institute of Buddhist Studies, Leh, was established in 1959 to train students in Buddhist philosophy, literature and arts. The Institute is affiliated to the Sampurnanand Sanskrit Vishwa Vidyalaya, Varanasi.

Institutions of Anthropology and Ethnology

Anthropological Survey of India, Calcutta

The Anthropological Survey of India is a research organisation under the Department of Culture in the Ministry of Human Resource Development. Since its inception in 1945, the Survey is engaged in many field activities. It carries out researches on bio-cultural aspects of the Indian population particularly on the contemporary problems being faced by the tribes and weaker section. It conducts exploratory surveys in order to unearth, preserve and study the ancient human remains. Besides, it collects documents and disseminates bio-cultural information of Indian population through its anthropological museums and other media. In the Seventh Plan programmes, sixteen national projects have been identified including one entitled "People of India". This project seeks to generate upto-date ethnographic information on all the communities of India (5,000), and to highlight in particular the linkage that bring them together. Besides the members of the ASI, the project is being implemented with the active participation of scholars from various universities, tribal research institutes and other organisations interested in this field of research. Through a computer format, data are processed so as to generate profile on each community. Nearly seventy per cent of the target has so far been achieved. The reports on the communities of Andaman and Nicobar Islands and North East India have been finalised which are being edited for publication.

Three Task Forces were constituted to expedite three long pending projects. All these projects contain base life information either on biological or on cultural aspects of Indian population. The first set consisting of basic data of All India Anthropometric Survey (South Zone) will be released shortly. Preliminary tables containing data of All India Bio-anthropological Survey are under preparation. The basic data of All India Anthropometric Survey (North Zone) and all Indian Cultural Trail Survey are being processed for computerisation.

Collaborative activities of the ASI were geared up. A workshop on people of India and a national seminar 'on Administration, Development and Nation Building' were organised in collaboration with Indian Academy of Social Sciences in Bombay and India Anthropological Association in New Delhi respectively. Infrastructural preparations have been made to organise an International Seminar on Visual Anthropology in collaboration with Indian National Trust of Art and Culture. Collaboration with Place Name Society of India to prepare a national directory of place names have been discussed. The research project on Area Study North East India is continued. The Project Potrait Building System undertaken in collaboration with Bureau of Police Research and Development (Ministry of Home Affairs) resulted in the preparation of "Identity Kit".

Rashtriya Manav Sangrahalaya, Bhopal

Rashtriya Manav Sangrahalaya, Bhopal is an autonomous organisation w.e.f. 15 March 1985. Earlier, it was known as 'National Museum of Man'.

The Sangrahalaya is conceived as an organic whole and a growing movement. It is dedicated to

depict the story of humankind in terms of human : (a) biological and (b) cultural evolution with particular reference to the growth and development of Indian civilisation. The main focus of the Sangrahalaya is on : (i) human evolution and human variation; (ii) culture and society in pre-historic times; and (iii) patterns of culture.

National Research Laboratory for Conservation of Cultural Property, Lucknow

The National Research Laboratory for Conservation of Cultural Property, Lucknow is a premier institution of its kind in south and southeast Asia established in 1976.

The Laboratory was set up to carry out research in the methods of conservation and for providing technical assistance and training to museums; archaeologica departments and other institutions having objects of arts. It has acquired a wide variety of advanced sophisticated equipments required for its various areas of research and conservation. A regional laboratory has been set up at Mysore.

Promotion and Dissemination of Culture

The Centre for Cultural Resources and Training (CCRT) was set up in 1979 as an autonomous organisation fully financed by the Government. The Centre had taken over the scheme-propagation of culture which was being implemented by the Delhi University from 1970 onwards.

The broad objective of the Centre is to revitalise the education system by creating an understanding and awareness among the students about the plurality of regional cultures of India and integrating this knowledge with the curriculum subject. To fulfill its objectives, the Centre organises a number of training programmes for the benefit of inservice teachers drawn from Primary/High/Higher Secondary School and Teachers Educations in different parts of the country, the main thrust of the Centre's training programmes being in the area of linking education with culture and making students aware of the role of culture in all aspects of India's developmental programmes. Culture is not only a vital component of education but it encompasses all aspects of man's life. Hence, the training programmes dwell on the role of culture in science and technology, housing, agriculture, medicine, etc. An important component of the training is creating an awareness amongst students and teachers of environmental pollution problems and their role in conservation and preservation of the natural and cultural heritage.

The Centre is collecting resources in the form of slides, photographs, films and recordings so as to prepare cultural educational material for free distribution to schools. The Centre also produces various other programmes in order to promote dissemination of culture.

The Centre took over the Cultural Talent Search Scholarship Scheme from the Department of Culture in December 1982. The Scheme provides facilities to outstanding children in the age-group 10-14 years studying either in recognised schools or belonging to families of practising traditional performing or other arts to develop their talent in various cultural fields laying special emphasis on art forms.

With the introduction of the National Policy of Education, 1986, the Centre has, since the last two years taken on the additional task of formulating and implementing schemes related to the Cultural Perspective of the Programme of Action of the National Policy of Education. In the field of production and distribution of primary school resource material, training of teaches at district level and setting up of school museums, preparatory work and training has begun. A number of new schemes have been added to the on-going projects of CCRT. These envisage stepping up of production of cultural resources and software for education, introduction of cultural component in schools under minimum cultural

content programme. New programmes are being proposed for :

- (i) assistance to states and Central Institutes for preparation of model studies and cultural software;
- (ii) study in value-oriented education;
- (iii) setting up of evaluation studies; and
- (iv) review of text books.

For the purpose of imparting training and setting up of school museums, the Centre is conducting programmes in different parts of the country. Youth camps are also planned in different parts of the country to fulfil the objective of interaction between school going urban youth with their age-group in rural and tribal areas for working for the conservation of the natural and cultural property of the country.

Zonal Cultural Centres

An event of great significance in the sequence of cultural efforts is the setting up of Zonal Cultural Centres. These centres have been conceptualised with the avowed aim of projecting cultural kinships that transcend territorial bounds. The idea is to arouse and deepen a awareness of the local cultures and how these merge into zonal identities and eventually into the rich diversity of India's composite culture. Besides, these are also intended to document, preserve, and to sustain the vanishing art forms and oral traditions. The involvement of artists and creative people has been inbuilt in the set up through a system of autonomous governance.

The seven Zonal Cultural—Centres established under the new scheme comprise of (i) North Zone Cultural Centre, Patiala; (ii) Eastern Zone Cultural Centre, Santiniketan; (iii) South Zone Cultural Centre, Tanjavur; (iv) West Zone Cultural Centre, Udaipur; (v) North Central Zone Cultural Centre, Allahabad; (vi) North East Zone Cultural Centre, Dimapur; and (vii) South Central Zone Cultural Centre, Nagpur. The participation of states in more than one Zonal Cultural Centre according to their cultural linkage is a special feature of the composition of the different zonal Centres.

Indira Gandhi National Centre for Arts

The Department of Arts under the Ministry of Human Resource Development has been assigned the work of setting up the Indira Gandhi National Centre for Arts (IGNCA) in New Delhi. The IGNCA is visualised as a centre encompassing all arts, specially in their dimension of mutual interdependence, inter-relationship with nature, environment, function, daily life, societal structures, world view and cosmology. Through the diverse programmes at the level of research, publication, training, creative activities and projection it will place the arts within the context of natural and human environment as an intrinsic part of life style at all levels of society and regions.

In the first phase of its development, the centre will concentrate on India but will extend its scope to other civilisations and cultures, especially those of South Asia, South-East Asia, East Asia, West Asia, Africa, Latin America, Australia, Europe, North America, etc.

The aims of the Centre are :

- (i) to serve as a major resource centre for the arts, especially primary material, written, oral, visual, pictorial, etc;
- (ii) to undertake research and publication programmes of reference works, glossaries, dictionaries,

encyclopaedias, etc;

- (iii) to establish a tribal and folk arts collection and conservation centre and museum with a view to undertake systematic scientific studies;
- (iv) to provide a forum for creative and critical dialogue through performances and exhibitions, multi-media projections, conferences, seminars, workshops amongst the diverse arts ranging from architecture and literature to music, sculpture, painting, photography, films, pottery, weaving and embroidery; and
- (v) to evolve models of research programmes and administration for the arts more pertinent to the Indian ethos and reality.

The fundamental approach of the Centre in all its work will be inter-disciplinary and multi-disciplinary. It aims to establish through specific programmes and projects the interdependence amongst the arts, the mutual influence amongst diverse regions and the inter-relationship of the tribal, rural and urban, margi and desi, the prescriptive literature (frozen), folk and classical and the plural (fluid) or traditions.

The IGNCA will facilitate exposure, interaction and foster dialogue amongst the arts, regions and levels of society, between ideas, philosophy, science, technology and the arts, as also societal structures and the arts.

India in World Heritage

The World Heritage Committee, constituted by the UNESCO under the provision of the International Convention for the Protection of the World Cultural and Natural Heritage has recommended the inscription of ten cultural monuments and three natural sites from India in the World Heritage list. These include (a) Cultural Monuments : Ajanta Caves, Ellora Caves, Agra Fort, Taj Mahal, The Sun Temple, Konark, Groups of Monuments at Mahabalipuram, Churches and Convents of Goa, Groups of Monuments at Khajuraho, Groups of Monuments at Hampi, and Groups of Monuments at Fatehpur Sikri; (b) Natural sites : Kaziranga National Park, Manas Wildlife Sanctuary, and Keoladeo National Park.

National Council for Culture

The National Council for Culture (formerly National Council of Arts) was set up on 19 September 1983 by the Government for coordination of activities of institutions of arts, archaeology, anthropology, archives, museums and for providing guidelines for future plans and programmes of institutions, agencies, etc.

Cultural Relations

The Departments of Culture has been actively pursuing a policy of cultural co-operation with many countries in the world through a system of bilateral cultural agreements and cultural exchange programmes. While the cultural agreements lay down the broad principles of cooperation, these are implemented through cultural exchange programmes of 2-3 years' duration. At present, India has cultural agreements with 77 countries and 2-3 years' cultural exchange programmes with 52 countries.

Festival of India

A Festival of India was first held in UK in 1982. Its objective was to bring to the outside world

glimpses of the richness and variety of India's cultural heritage as also to show aspects of contemporary India. The programme comprised of exhibitions, performing arts, cinema and symposia, thus encouraging the participation of a large number of people and a range of experiences.

Two more Festivals were held in 1985-86; one in France and the other in the United States of America. The emphasis in France was on the performing arts and the cinema, with a few carefully chosen exhibitions, including the first ever exhibition on Indian architecture held in a foreign country. In the United States of America, a large number of exhibitions and symposia took place in addition to performing art events and cinema. A number of organisations sponsored local or associated events under the Festival banner and towards the end of this 18 month exposition, the Festival of India had covered over 100 cities exposing to 15 crore people through actual events, and television and media coverage.

In 1987 the fourth Festival of India was inaugurated by the Prime Minister in the USSR on 3 July. This Festival is planned for a duration of one year and will be the largest ever Festival in terms of scope and number of participants.

The Festival of India also organised "Indian Manifestation" in Sweden, which opened in August 1987 as three-month exposition. Another Festival of India is planned for Japan beginning April 1988.

It has been decided to host a Festival of the USSR in India on a reciprocal basis which will be inaugurated in November 1987, and a Japan Month during October-November 1987 in India.

Scientific Research

India has had a long and distinguished tradition in science from accomplishments of ancient times to great achievements during this century; the latter have, prior to Independence, related largely to pure research carried out in educational institutions. At the time of Independence, our scientific and technological infrastructure was neither strong nor organised in comparison with those of the developed world. This has resulted in our being technologically dependent on the skills and expertise available in other countries during the early years after Independence. In the past four decades since Independence, an infrastructure and capability largely commensurate with meeting national needs has been created minimising our dependence on other countries. But we still have a long way to go in this field to be self-sufficient. A range of industries from the small to the most sophisticated have been established covering wide areas of utilities, services and goods. There is now a reservoir of expertise well acquainted with the most modern advances in basic and applied areas that is equipped to make choices between available technologies, to absorb readily new technologies and provide a framework for future national development.

Scientific Research in India is carried out under three major sectors, viz, the Central Government, the state governments and the various in-house research and development units of industrial undertakings, both under the public and the private sectors. The bulk of the research effort in the country is financed by major scientific agencies such as the Departments of Science and Technology, Atomic Energy, Space, Scientific and Industrial Research, Electronics, Non-Conventional Energy Sources, Environment, Ocean Development, Biotechnology and Indian Council of Medical Research, etc. There are about 200 research laboratories within the purview of these major scientific agencies carrying out research in different areas. Besides, there are a large number of scientific institutions under the Central Ministries/Departments which carry out research programmes of practical relevance to their areas of responsibility. The state governments supplement the efforts of the Central Government

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in areas like agriculture, animal husbandry, fisheries, public health, etc. The institutions of higher education carry out sizeable work in the field of science and technology and are supported by the University Grants Commission and the Central and state governments. They also carry out sponsored research projects financed by different agencies.

A number of incentives are being provided by the Government to industrial establishments in the private and the public sectors to encourage them to undertake research and development activities. Consequently, scientific research is gaining momentum in many of the industrial establishments. As on January 1988 there were over 1,000 in-house research and development units in the public and private sectors which were recognised by the Department of Scientific and Industrial Research.

The expenditure on research and development and related scientific and technological activities has increased from Rs. 4.68 crore in 1950-51 to Rs. 1,890.58 crore in 1984-85 and is estimated to be of the order of Rs. 2,200 crore in 1985-86. The Seventh Plan outlay for the Science and Technology sector is Rs. 7,535 crore compared to the Sixth Plan outlay of Rs. 3,716 crore.

Science Policy

The Government of India's Science Policy, based on the Scientific Policy Resolution as adopted by the Parliament on 4 March 1958, lays stress on the government's responsibility to secure for the people, the benefits from the acquisition of scientific knowledge and practical application of research. It is also the Government policy to encourage individual initiative for dissemination of knowledge and foster programmes to train scientific personnel to fulfil the nation's need in the fields of science and education, agriculture, industry and defence. In the national priorities, science and technology have been recognised as major instruments for achieving national goals of self-reliance through economic and multifaceted socio-cultural development. New Departments of Environment, Ocean Development, Non-conventional Energy Sources, Scientific and Industrial Research and Biotechnology have been set up to deal with nationally important and newly emerging areas that call for significant science and technology inputs. Significant achievements have been recorded as a result of the policy.

Technology Policy Statement

The Technology policy statement announced in January 1983 is in response to the need for guidelines to cover a wide-ranging and complex set of related areas keeping in mind the capital-scarce character of a developing economy. It aims at ensuring that country's available natural endowments, especially human resources, are optimally utilised for a continued increase in the well-being of all sections of the people. Technological advancement is sought to solve the country's multifarious problems and to be able to safeguard its independence and unity. Among its objectives are attainment of technological competence and self-reliance, provision of gainful employment, making traditional skills commercially competitive, ensuring maximum development with minimum capital, modernisation of equipment and technology, conservation of energy, ensuring harmony with environment, etc.

Expenditure

An idea of expenditure on scientific research and development at the national level as also the outlays for the science and technology sector over the successive plan periods is given in Table 1.1 and 1.2. It may be seen therefrom that there has been a substantial growth in the outlays for science and technology over the successive plan periods.

Apex Advisory Body

The Science Advisory Council to the Prime Minister, an apex advisory body with a tenure of two years, considers a variety of items keeping in view the national priorities, e.g. New Education Policy, Drug Policy Minerals Policy, Technology Forecasting Mechanisms, Report of the Committee on Indian Scientists and Technologists working abroad-Project TIES; issues like Health of Science in India and Perspective plan-2001 A.D. It has initiated a number of studies in some of the new and emerging areas like instrumentation, parallel computing, materials, chemical industry, photonics, robotics, management of land and water resources and priorities in genetic research in India; it has also examined plans for the various Technology Missions and other S and T programmes of high plan priority.

Table 1.2
Expenditure on Scientific Research and Development and Related Activities

(Rs. in crore)

<i>Sector</i>	<i>Expenditure on Research and Development</i>		
	<i>1982-83</i>	<i>1983-84</i>	<i>1984-85</i>
Central Sector	936.57	1,082.28	1,474.98
State Sector	121.41	150.90	178.85
Private Sector	196.98	207.83	236.75
Total	1,254.96	1,441.01	1,890.58

Table 1.3
Progress of Expenditure in Plans

(Rs. in crore)

<i>Details</i>	<i>Plan</i>	<i>Non-plan</i>	<i>Total</i>
First Plan	14	6	20
Second Plan	33	34	67
Third Plan	71	73	144
Fourth Plan	142	231	373
Fifth Plan	693	688	1,381
Sixth Plan	2,064	1652	3,716
Seventh Plan	4,398	3,1371	7,535

1. Estimated.

Science and Technology

The Department of Science and Technology (DST) which was set up in 1971 has been assigned the responsibility of promoting new areas of science and technology undertaking or financially sponsoring scientific and technological surveys, research, design and development, supporting national research institutions and scientific bodies. It also coordinates all activities relating to international

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science and technology collaborations except in specific areas assigned to other agencies. It deals with the promotion of and support to indigenous technology; and disseminates scientific and technological information; coordinates multi-institutional inter-disciplinary activities in areas of science and technology. It also provides secretarial support to the Science Advisory Council to the Prime Minister, to the National Science and Technology Entrepreneurship Development Board and to the National Council for Science and Technology Communication.

Over the years, the Department has made sustained efforts to promote and accelerate the development of science and technology in areas relevant for societal application, coordination of inter-disciplinary multi-institutional programmes and providing support to academic and other research institutions for carrying out basic and applied research. The Department has been catalytic and instrumental in identifying, formulating and implementing a large number of programmes with the help of the expertise available within the country and abroad, in frontline emerging areas such as biotechnology, materials, plasma physics, etc. These programmes are ultimately expected to yield results of direct relevance to national development.

Promotion Schemes

The two existing promotion schemes, viz., General Research Scheme (GRS) and Science and Engineering Research Council (SERC) have been integrated into one, i.e., R and D funding mechanism. The 'broad objectives of this scheme are : (i) to promote research in newly emerging and frontline areas of science and engineering including multi-disciplinary fields; and (ii) to selectively promote the general research capabilities in relevant areas of science and engineering, taking into account existing research capabilities of the host institutions.

As a part of promotional programme, emphasis has also been given to encourage participation of younger scientists in science and technology activities by providing them support for creative research through project, support, and for participation in international conferences. Besides, they are provided opportunities to interact with eminent scientists through contact programmees. As a part of this scheme for young scientists, a new programme is also initiated to support young research workers who have extra spark of originality and motivation, under Science and Engineering Research Council.

An Important element of science and technology promotion which relates to strengthening of infrastructural facilities is the creation of seven regional sophisticated instrumentation centres in the country in addition to specialised instrumentation facilities. Other promotion schemes which have made considerable progress during the Sixth Plan, are those relating to technology development for scheduled castes and scheduled tribes and other weaker sections of the science; Science and technology for women and assistance to professional bodies. During the Seventh Plan, the Department of Science and Technology has started new schemes for Utilisation of Scientific Expertise of Retired Scientists (USERS) and Science and Technology Application for Rural Development (STARD).

Better Opportunities for Young Scientists in the Area of Science and Technology (BOYSCAST) was initiated to provide greater opportunities to talented young scientists and technologists for specialised training in chosen areas of science and technology under the guidance of experts of international repute.

State Council

To encourage scientific activities at the state level, assistance is given to state governments for development of state councils for science and technology. The main role of these Councils is to act as

focal points in the states for planning, coordinating and promoting science and technology activities. State Councils for Science and Technology or State Department of Science and Technology have been set up in nearly all the states and union territories.

Engineering Sciences

A concerted effort has been made in initiating and funding research and development projects directly related to sectors like transportation, communication, housing, etc. Each of these projects has been formulated in close consultation with the concerned government departments, industry and user agencies, with funding given jointly by the agencies. Coordinated programmes in emerging areas have also been supported where the research has been proved to be of international standard. Setting up of data banks for information needed by research and development organisations and industry is also being supported to widen the application of various materials and processes.

Testing and Calibration Facilities

The National Coordination of Testing and Calibration Facilities Programme has been formulated essentially to ensure and improve the quality of industrial products, provide consumer protection and promote export of Indian goods. The objectives of the scheme are: establishment of accreditation/recognition by the Central Government of testing facilities in various sectors; setting up hierarchy of calibration laboratories; and promotion of testing and calibration facilities to improve the national needs.

Newer Fibres and Composites

The programme has centred on development of specific fibres and resins systems along with development of equipment and setting up of regional test laboratories since 1975. In order to successfully transfer the various products, since 1975. In order to successfully transfer the various products, a network of research groups was planned to synthesise, scale up and test each resin system. A number of resin systems are under transfer to industry. The programme is now directed towards development of specific components for automobiles, two-wheelers, marine vessels and other industries.

National Science and Technology Entrepreneurship Development Board

The National Science and Technology Entrepreneurship Development Board (NSTEDB) has been undertaking several schemes and programmes on popularisation and development of entrepreneurship among science and technology persons in the country. In order to provide suitable infrastructure for technology development and transfer as also for providing necessary assistance to entrepreneurs, six Science and Technology Entrepreneur Parks (STEPS) have been set up by the Board in reputed engineering institutions in Ranchi, Bombay, Calcutta, Kanpur, Trichurapally and Mysore. A scheme on preparation of opportunity profiles for stimulating the growth of technology-based industries has been launched in 13 backward districts. For institutionalising entrepreneurship education in various S and T courses, syllabi have been formulated and infrastructural facilities for introducing the same have been created by establishing Entrepreneurship Development Cells (EDCs). So far such cells have been established in 12 engineering college. Besides the above scheme, 109 Entrepreneurship Awareness Camps (EACs) have been conducted for popularising entrepreneurship among S and T persons as their alternate vocation. Moreover 128, specialised entrepreneurship development programmes have been conducted in various parts of the country as a result of which 1,922 persons have been trained.

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National Council for Science and Technology Communication

The National Council for Science and Technology Communication (NCSTC), comprising representatives from Central and state government, mass media, voluntary agencies, etc., has prepared detailed plans for popularisation of science and technology and growth of scientific and technological temper among people. The different areas that NCSTC focussed attention included training in S and T communication; S and T communication information system comprising among other things, a data-base resource-letters for communicators in different Indian languages and a newsletter for science clubs; development and dissemination of S and T communication software (all media); field projects involving large numbers of people in S and T communication activities; national awards for science popularisation; research in S and T communication; and coordination with other agencies in S and T communication.

National Resources Data Management System

It is multi-disciplinary and multi-agency project aimed at generating computer compatible spatially oriented data bases of natural resources and socio-economic parameters to facilitate area specific micro-level planning. It was launched in 1982 and aims at developing and operationalising a scientific methodology for management of data on natural resources which is responsive to the modern management needs. Data Base Centres have been set up in five districts in 1986-87 and are now fully operational.

Deep Continental Studies

Multi-disciplinary studies are planned to be taken up along with some critical profiles to elucidate the deep structures and the geological processes taking place in the Indian lithosphere. These studies will be supported by intensive investigations and petro-physical properties of rocks under ambient and simulated conditions.

Himalayan Glaciology

The programme of study includes glacial dynamics and effect of glacier and snow on the environment and climate by collecting comprehensive data from one sample glacier like Chhota Shigri from multi-disciplinary expedition every year. This will include snow covered mapping, glacier inventory, radiation balance, geological, geomorphological and hydrological investigations including laboratory studies on snow and ice.

Arid Zone Research

The project is of inter-institutional collaborative programme adopting multi-disciplinary approaches to enhance the productivity of land, man and animal in the arid regions. Nine projects under the programme from various R and D institution have been approved. The environment impact studies of Indira Gandhi Nahar Project and greening of Aravallies are being evolved as S and T mission oriented projects.

Research in Atmospheric Sciences

Research in the field of atmospheric sciences is all the more important in view of its greater significance in our agricultural economy. A coordinated multi-institutional research project in high priority areas of atmospheric sciences, like atmospheric boundary layer; atmospheric chemistry; natural

disaster studies (e.g., tropical exclones, local severe storms); cloud physics and weather modification. Programmes have been launched to improve the present level of understanding of monsoon dynamics, its vagaries and construct suitable regional and global circulation models for the prediction of weather.

A task force set up for aircraft reconnaissance of cyclones, cyclone training and research, identified viable aircraft and instrumentation payload that could be fruitfully used for acquiring real-time actual date of cyclone for assessing its intensity and issuing improved prediction and warning to coastal population.

International Cooperation

There have been sustained efforts over the years to promote international scientific and technological cooperation with developing as well as developed countries. New formal arrangements with some of the developing countries have been established through negotiations and signing of protocols and agreements. A number of activities like workshop and training programmes in specific areas of common interest have been identified under the South Asian Regional Cooperation Programmes in Science and Technology with other countries of the region.

An Integrated Long Term Programme of Cooperation in Science and Technology was signed between India and the Soviet Union on 3 July 1987, identifying a number of areas of priority interest to both the countries. An agreement on technical and scientific cooperation between India and the Philippines as well as Memorandum of Understanding on S and T cooperation between India and Venezuela was concluded during 1987.

National Surveys and Other Institutions

The Survey of India, Dehradun; the National Atlas and Thematic Mapping Organisation, Calcutta and the India Meteorological Department, New Delhi are the three subordinate organisations under the control of the Department of Science and Technology.

The Survey of India, Dehradun is the principal mapping agency of the nation, which is responsible for preparation of topographical and geographical maps. The Survey of India carries out geodetic triangulation, traverse, trilateration, base measurements and precision levelling for strengthening the existing national framework for topographical survey and for specific requirements of developmental projects.

Modern photogrammetric methods are being used for topographical irrigation schemes, flood management and other development mapping.

The Survey of India advises the Government on all survey matters, viz. geodesy, photogrammetry, cartography, reprography, demarcation of the external boundaries of India and their depiction on maps. It is the national agency responsible for standardisation of geographical names. Aerial photography of the whole country is also coordinate by the Survey of India.

The Survey and Training Institute at Hyderabad imparts training to Indian nationals and those of neighbouring countries in various disciplines of surveying and mapping.

The National Atlas and Thematic Mapping Organisation (NATMO), Calcutta is responsible for the compilation of National Atlas of India in English, Hindi and regional languages; preparation of thematic maps based on research studies on environmental aspects and their impact on social and economic development; and preparation and compilation of land use and land capability maps.

Technology Utilisation

Promotion and support to indigenous technology has been rendered through several measures like registration of in-house research and development units set up in the industries, appropriate fiscal incentives for expenditure incurred on scientific research and also for contributions to scientific research institutions, delicensing of industries based on indigenous research and development, depreciation allowance at enhanced rates for commercialising indigenous technology, custom duty exemption to research institutions of non-commercial nature for import of scientific instruments, etc. Presently, in house research and development units of various industries are being registered with the Department of Scientific and Industrial Research.

As on June 1987, there were more than 975 units recognised with an annual estimated expenditure of about Rs. 550 crore out of which 40 per cent is by 100 public sector units. Programmes initiated during the Seventh Plan period towards promotion, development and utilisation of technology include, to mention a few, those relating to National Register of Foreign Collaboration (NRFC), Technology Absorption and Adaptation Scheme (TAAS), Transfer and Trading in Technology (TATT), Promotion and Support to Consultancy Organisations, etc. A Consultancy Development Centre has been set up with the support and cooperation of various consultancy associations and consultants.

Undertakings

National Research Development Corporation

Set up in 1953 the National Research Development Corporation (NRDC) is the prime organisation for the promotion, transfer, adaptation, adoption and licensing of technologies developed by national laboratories. NRDC has made significant progress during the years in the licensing of technologies and promotion and utilisation of such technology through equity participation, partial financial assistance for developmental projects, assistance in horizontal transfer of technology, promotion of invention by giving prizes, awards, providing patent assistance, etc. In the field of technology transfer, the Corporation has achieved significant successes relating to production of cement, based on vertical shaft kiln technology, flow improver for long distance waxing, crude oil transport, energy-saving titanium anodes for chlor-alkali industry and development of certain processes in petroleum technology.

The Technology Bank at the Centre for Technology Transfer of the Corporation started functioning in 1982, and over 3,000 schemes/project profiles were added to this Bank for consultation. The Corporation has embarked on promotion work such as participation in fairs, seminars, workshops and entrepreneur get-togethers, bringing out special publications like Technology Digest, Gramshilp, etc.

Central Electronics

The Central Electronics Limited (CEL) located at Sahibabad in Uttar Pradesh is the third largest in the world, manufacturing Solar Photo-Voltaics (SPV) using the crystalline silicon solar cell technology, developed entirely in-house. It has over 7,000 SPV installations distributed throughout the country to its credit, powering highly professional and rural needs alike. Working in a variety of remote locations and hostile environments, meeting stringent standards for reliability and availability. The CEL has been developing and supply to Indian Railways specialised electronic systems for Railway Signalling and Safety. It has established itself as a supplier of medium capacity Electronic Telephone Exchanges (EPABX) using indigenous technology. It is the first company to introduce projection television in the country. It is the largest producer of professional ferrites in the country with indigenous know-how, meeting the requirement of the communication and TV industry.

Atomic Energy

The Atomic Energy Commission, set up in 1948 is responsible for formulating the policy for all atomic energy activities in the country. The Department of Atomic Energy (DAE), set up in 1954, is the executive agency for implementing the atomic energy programme.

Nuclear Power

A three stage atomic power programme has been envisaged to use the country's uranium and vast thorium resources. The first stage started with natural uranium fuelled Pressurised Heavy Water Reactors (PHWRs) producing power and plutonium as a by-product. The second stage will have plutonium fuelled fast breeder reactors producing power and plutonium and uranium-233 from thorium. The third stage reactors will be based on the thorium cycle producing more uranium than they burn. The DAE aims at establishing 10,000 mw of nuclear power generating capacity by 2000 AD which would then represent about 10 per cent of the total electrical generating capacity in the country.

The Nuclear Power Board (NPB) of DAE is responsible for design, construction and operation of nuclear power stations. The NPB is at present operating three nuclear power stations; 2 x 160 mw Tarapur Atomic Power Station, near Bombay, 2 x 220 mw Rajasthan Atomic Power Station at Rawatbhat, near Kota and 2 x 235 mw Madras Atomic Power Station at Kalpakkam, near Madras. Another 2 x 235 mw nuclear power station is at an advanced stage of construction at Narora in Uttar Pradesh. Construction work on the fifth nuclear power station consisting of 2 x 35 mw units at Kakrapar in Gujarat is also in progress. Work has also commenced on two more stations each consisting of 2 x 35 mw units at Kaiga in Karnataka and a Rawatbhat in Rajasthan. The Tarapur Atomic Power Station uses enriched uranium fuelled light water cooled reactors known as boiling water reactors while all the subsequent stations use natural uranium fuelled heavy water cooled reactors known as pressurised heavy water reactors. Design work on 500 mw power reactor is in progress.

Heavy Water Projects

There are five heavy water plants at Vadodara (Gujarat), Rawatbhat (Rajasthan), Talcher (Orissa), Tuticorin (Tamil Nadu) and Thal (Maharashtra). Besides a small heavy water plant at Nangal (Punjab), set up in the late fifties, two more heavy water plants are being set up at Manuguru (Andhra Pradesh) and Hazira (Gujarat). The Rawatbhat, Thal Manuguru and plants are based on indigenous technology.

Atomic Minerals/Fuel

The Atomic Minerals Division (AMD) is one of the first units started by the Atomic Energy Commission. The AMD with its headquarters at Hyderabad is responsible for prospecting and development work related to various mineral resources.

The Nuclear Fuel Complex (NFC) at Hyderabad fabricates nuclear fuel for the power reactors and produces zircaloy products and seamless stainless steel tubes. The NFC also produces certain special materials for critical industries and very high purity materials needed by electronics industry.

Research and Development

Most of the research and development work on the application of atomic energy is done at the Bhabha Atomic Research Centre at Trombay, near Bombay. At present, there are three research reactors in operation at the Centre. These are : 1 mw (thermal) swimming pool reactor APSARA, 40 mw (thermal) reactor CIRUS and 100 mw (thermal) reactor DHRUVA. A mini pool 30 kw reactor

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KAMINI, containing uranium-233 fuel is in an advanced stage of construction at Kalpakkam (Tamil nadu). A plutonium fuelled fast reactor PURNIMAL was built at Trombay in 1972. Later in 1984, it was modified as a homogenous reactor PURNIMA-II which uses uranium-233 fuel in the form of a solution. PURNIMA-II is being modified as PURNIMA-III to test the KAMINI core.

The Variable Energy Cyclotron Centre (VECC) of BARC at Calcutta is a national facility for carrying out advanced experimental research in nuclear sciences. The Cyclotron is also used for the irradiation of shortlived isotopes for biological and medical applications. The High Altitude Research Laboratory of BARC at Gulmar provides facilities for high altitude research to Indian institutes and universities. There is also a Nuclear Research Laboratory at Srinagar. The Seismic Station of BARC at Gauribidanur (Karnataka) detects and identifies underground nuclear explosions.

BARC also produces radioisotopes and related equipment for use in medicine, agriculture and industry. About 400 radioactive products and labelled compounds are produced and every year about 50,000 consignments of radioisotopes and equipment are supplied to users in the country and abroad. Radioisotopes are used in a number of areas such as diagnosis and treatment of diseases, industrial radiography, development of high yielding disease resistant mutants of rice, wheat, groundnut, pulses, etc. A commercial radiation sterilisation plant ISOMED at Trombay provides sterilisation services to the Medical products industry in the country. The Radiation Medicine Centre at Bombay uses radioisotopes for diagnostic and therapeutic applications.

The BARC activities cover a wide range of research and development tasks in areas such as physics, chemistry, engineering, metalurgy, fuel reprocessing, fuel fabrication, radioisotopes, waste management, electronics, instrumentation, lasers, biology, agriculture, food technology, radiation medicine, etc. The Centre has developed a number of technologies, some of which have already been transferred to industry for commercial exploitation.

The BARC also conduct a countrywide personnel monitoring service for evaluating radiation exposure of workers in institutions using radiation sources.

The Indira Gandhi Centre for Atomic Research (IGCAR) at Kalpakkam (Tamil Nadu) carries out research and development pertaining to fast reactor technology. The major facility at the Centre is the indigenously constructed 40 mw (thermal) and 13 mw (electrical) Fast Breeder Test Reactor (FBTR). The FBTR is a major step in the country's nuclear power programme. It has paved the way for using our vast thorium resources. Design work on 500 mw prototype Fast Breeder Reactor (PFBR) has also been taken up.

A Centre for Advanced Technology has been set up in 1984 at Indore, Madhya Pradesh to spearhead research in high technology fields such as fusion, lasers and accelerators. A Synchrotron Radiation Source, being set up at the Centre, will be a major facility in the country.

Set up in 1985, the Atomic Energy Regulatory Board (AERB) carries out regulatory and safety functions as envisaged under the Atomic Energy Act, 1962. It lays down safety standards and frames rules and regulations in regard to regulatory and safety requirements. The Board is a functionally autonomous body reporting to the Atomic Energy Commission.

Public Sector Undertakings

There are three public sector undertakings under the administrative control of DAE via the Indian Rare Earths Limited (IRE), the Uranium Corporation of India Limited (UCIL) and the Electronics

Corporation of India Limited (ECIL). IRE operates the mineal sands industry in Manavalakurichi and Chavara and the rare earths plant at Always in Kerala. It also produces thorium products at Bombay. The IRE has set up the Orissa Sands Complex (OSCOM) at Chhattarpur (Orissa) for enhancing rare earth's production. UCIL mines and processes uranium ore at Jaduguda in Bihar. It has also constructed a new mine at Bhatin (Bihar). The ECIL manufactures electronic instruments and equipment for nuclear as well as non-nuclear uses. ECIL also makes consumer electronic goods such as TV sets, calculating machines and computers.

Financial Support

The Department has been funding substantially the autonomous and scientific institutions under its administrative control like the Tata Institute of Fundamental Research (TIFR) Bombay, Tata Memorial Centre, Bombay, Saha Institute of Nuclear Physics, Calcutta, Institute of Physics, Bhubaneswar and the Institute of Mathematical Sciences, Madras.

Founded in 1945 as a centre for pursuit of fundamental research in mathematics, theoretical physics, cosmic rays and nuclear physics, the research activities of TIFR have now expanded to areas such as astronomy and astrophysics, chemical physics, molecular biology, solid state physics, solid state electronics and computer science. The Tata Memorial Centre (TMC) is the foremost in the country in education, research and treatment of cancer. The Saha Institute of Nuclear Physics (SINP) is providing facilities in advanced research in the fields of experimental and theoretical nuclear physics and instrumentation. The Institute of Physics, Bhubaneswar provides facilities in advanced research in the fields of theoretical solid state, nuclear and high energy physics and in the field of experimental solid state physics.

The Institute of Mathematical Sciences, Madras provides facilities for research in mathematics, high energy physics, nuclear physics, statistical mechanics and stochastic processes besides other related academic activities. It is under this Institute that Dr. R. Balasubramanian found a solution to the Waring's problem which is a 200-year old problem in Number Theory.

The Department of Atomic Energy has also been the main source of funding to the Mehta Research Institute, Allahabad where the main thrust is combinational mathematics, related computer science, digital electronics and corresponding basic mathematics. The Department also supports research schemes in various disciplines of nuclear energy and mathematics with an objective of developing research and technical manpower in Indian universities and research institutions, by giving project-linked financial assistance.

Space Research

The Indian space programme is directed to the goal of self-reliant use of the space science and technology for national development, its main thrust being (i) satellite communications for various national uses; (ii) remote sensing for resources survey and management, environmental monitoring and meteorological services; and (iii) development and operationalisation of indigenous satellites and launch vehicles for providing these services.

Organisation

The Indian Space Programme began in 1962 with the creation of the Indian National Committee for Space Research (INCOSPAR). In 1969, the Indian Space Research Organisation (ISRO) was set

up. The ISRO and the Physical research Laboratory (PRL) functioned as autonomous agencies supported mainly by the Department of Atomic Energy (DAE). Later, these organisations were brought within the ambit of the Space Commission and the Department of Space (DOS) was created 1972. The National Remote Sensing Agency (NRSA), an autonomous registered society, was transferred to the aegis of DOS in 1980. The INSAT-1 Space Segment Project was also organised in 1977 under DOS.

The role of the Space commission includes framing of policy, approval of the space programme budget and implementation of national policy in all matters concerning outer space. The ISRO is responsible for the planning, programming and management of research and development activities in the country in space science, technology and applications. The PRL conducts research programmes in space related sciences and the NRSA develops and uses modern remote sensing techniques for resources management. The ISRO, PRL, NRSA and the INSAT-1 space segment project function under the aegis of DOS. The ISRO Council and ISRO Headquarters provide overall direction to the scientific, technological and management tasks of the ISRO centres and units.

Space Applications

Indian National Satellite Systems

The first generation Indian National Satellite System (INSAT-1) represents India's first step towards implementing operational space systems for identified national requirements. The INSAT-1 is a multipurpose operational satellite system for domestic long distance telecommunications, meteorological earth observations and data relay nationwide direct satellite TV broadcasting to augmented community TV receivers in rural areas and nationwide radio and TV programme distribution for rebroadcasting through terrestrial transmitters.

The INSAT-1B satellite was successfully launched in August 1983. The INSAT-1B has completed four years of operational service. All the four services from the spacecraft are being continually utilised by the user agencies.

The INSAT-1 system was envisaged with a twin satellite space segment comprising a primary spacecraft and an active on-orbit spare. However, following the loss of INSAT-1A in September 1982, INSAT-1B became the prime satellite. To serve as the back up for INSAT-1B, the DOS has ordered INSAT-1C spacecraft. INSAT-1C is expected to be launched by means of the Ariane launch vehicle of the European Space Agency (ESA) in mid 1988. And in order to keep the continuity of INSAT-1 services till the second generation, indigenously built INSAT satellites are deployed, a fourth satellite in the series, INSAT-1D has also been ordered. This will be launched in early 1989 by a Delta launch vehicle.

Presently, 39 telecommunications earth stations are in operation in INSAT-1B network, providing some 3,960 two way-voice or equivalent circuits over 69 routes. The two highpower, S-band transponders in INSAT-1B are utilised by Doordarshan for national networking, sustaining the operations of low-power TV transmitters and for area specific direct augmented TV receivers. All except four of the 200 TV transmitters in the country receive national programme feed via INSAT-1B. Presently, some 3,200 Direct Reception Sets (DRS) are deployed in various parts of India for direct reception of INSAT-1B S-band TV transmission.

The Meteorological Data Utilisation Centre (MDUC) in New Delhi is fully operational. The MDUC processes the meteorological data from the INSAT-1B Very High Resolution Radiometer

(VHRR) as well as information from Data Collection Platforms (DCPs). As on 30 June 1987, VHRR on board INSAT-1B has been commanded to give more than 17,000 images-some 16,995 full images and 93 sector scans. The INSAT-1B VHRR instrument joined the small and select group of geostationary VHRR instruments that have completed three years of continuous satisfactory operation without any failure or exercise of redundancy. Twenty-two Secondary Data Utilisation Centres (SDUCs) are now operational, receiving realtime INSAT-1B VHRR data processed by MDUC. The initial set of 100 Data Collection Platforms (DCPs) for collection of meteorological, hydrological and oceanographic data from remote and uninhabited locations has been installed. The INSAT-1 spacecraft will be replaced by indigenously developed INSAT-II satellites which will eventually be launched from India.

Work on the INSAT-2 Test Spacecraft, to precede the operational series, has been initiated and the construction of these spacecraft is now in its third year. The INSAT-II space segment configuration is based on three identical, multipurpose (telecommunications, TV radio-broadcasting, meteorology) spacecraft, two of them co-located at the primary orbital position and one at the secondary slot. Each spacecraft will have larger service capabilities than the INSAT-1 satellites. The first INSAT-II (Test) satellite is expected to be launched in mid-1990, and the second in end-1991.

Indian Remote Sensing Satellite

The 950 kg IRS- 1A is the first in the series of semi-operational/operational remote sensing Indian satellites. The satellite will be put into a 904 km polar/sun synchronous orbit from the Soviet Union in 1988. It will provide data on agriculture, forestry and hydrology, besides aiding in crop inventory and forecasts, forest mapping and damage detection, studies covering land use/land coverage mapping, land degradation and desertification, waste land mapping, soil mapping, flood mapping, etc. IRS-1A constitutes a major element of National Natural Resources Management System. The payload of IRS-1A, consists of three state-of the art observation cameras using charge coupled devices (CCD) as detectors. Each of the three cameras will provide data in four spectral bands, three of which are in the visible region and the fourth in the near IR (infrared). A comprehensive utilisation programme has been drawn up for the effective utilisation of data available from IRS-1A. IRS-1A will be followed by a further series of improved spacecraft for earth observation.

National Natural Resources Management System (NNRMS)

One of the major elements of the Indian Space Programme is the development and development of remote sensing technology, in aid of a National Natural Resources Management System (NNRMS). The NNRMS from its headquarters in Bangalore is functioning with the main objective of liaising with different users of the State/Central Government departments/organisations in different tasks related to the use of remote sensing data such as establishment of infrastructure for remote sensing centre/unit/cell, supply of equipment for data processing and analysis, organising the information system for the remote sensing data in management of natural resources in the country. The three major components of NNRMS are : (a) application projects, (b) infrastructure and manpower development, and (c) establishing a National Natural Resources Information System (NNRIS). The applications project will be in major resource sectors such as agriculture, land use, water resources, forestry, geology, marine resources and environment. DOS/ISRO is the lead agency for a significant number of application projects. These projects are being executed in collaboration with a large number of state and Central Government agencies. Major contributions in the disciplines of soil, vegetation mapping

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and mineral targetting will be made from the National Bureau of Soil Survey and Land Use Planning/ ICAR, Forest Survey of India (Ministry of Environments and Forests) and Geological Survey of India (GSI) respectively.

Regional Remote Sensing Service Centres (RRSSC)

Five Regional Remote Sensing Service Centre (RRSSCs) are being set up for processing remotely sensed data. The Dehra Dun and Bangalore centres are already operational. The centres at Nagpur, Kharagpur and Jodhpur are underway. Another centre for the north-eastern region is planned. DOS will manage these regional centres initially. The backbone of the RRSSCs as well as the associated centres are a digital image analysis system primarily for handling satellite acquired terrain multispectral data.

Space Technology

Launch Vehicle

As a follow up to SLV-3, India took up a project for developing the Augmented Satellite Launch Vehicle (ASLV). The five-stage, all solid fuel ASLV with two strap-on boosters is designed to inject 150 kg satellite into low earth orbit. The ASLV employs a host of new technologies, of which the closed loop guidance is instrumental in achieving the precision needed to inject the satellite into a 400-km near circular orbit.

The first developmental flight of ASLV took place on 24 March 1987. But the vehicle could not put the SROSS-1 satellite into orbit because of a malfunction in the first stage motor of the launch vehicle. However, it validated a number of new technology elements relating to the launch vehicle, spacecraft, launch complex and ground stations. Efforts are being made to accomplish the launch of ASLV-D2 soon.

The Polar Satellite Launch Vehicle (PSLV) is India's third generation launch vehicle being developed to place 1000 kg class operational remote sensing satellites into a sun-synchronous polar orbit. Unlike its all-solid stage predecessor PSLV will make use of both solid and liquid fuel stages to generate adequate thrust and control capability to precisely orbit the satellites into 1000 km observation altitudes. The PSLV will have six strap-on boosters in contrast to two in SLV. The first launch of PSLV will orbit an Indian Remote Sensing Satellite.

The Rohini Sounding Rocket Programme (RSR) supports rocket meteorology, upper atmospheric research and flight systems development through sounding rocket flights from TERLS, SHAR and Balasore Rocket Launching Station.

Satellite Technology

The Stretched Rohini Satellite Series (SROSS) Programme is for the development of 150-kg class satellites to be launched by ASLV. The SROSS-1 mission is intended to monitor the launch vehicle performance, validate in-orbit operation of spacecraft mainframe elements and carry out a scientific experiment to study Gamma Rays bursts. The SROSS-2 will carry out a joint ISRO-DFVLR (West German Space Agency) remote sensing experiment with West German Monocular Electro Optic Stereo Scanner (MEOSS) payload. SROSS-3 is expected to carry out aeronomy experiments proposed by PRL and NPL. SROSS-4 mission will involve an ISRO-TIFR joint experiment using x-ray payload.

Launch Support Tracking Network and Range Facilities

Launch support and range facilities for ISRO missions are provided by the ISRO Range Complex (IREX). It comprises the facilities at SHAR, TERLS and the Balasore Rocket Launching Station. The ISRO Telemetry, Tracking and Command Network (ISTRAC), with its headquarters at Bangalore, operates the tracking network to support various satellite missions of ISRO. The ISTRAC comprises TTC ground stations at Sriharkota, Bangalore, Ahmadabad, Lucknow and Trivandrum, down range stations at Car Nicobar, Satellite Tracking and Ranging Station (STARS) at Kavalur, Tamil Nadu. The ISTRAC/TTC stations provide tracking support for Indian launch vehicles and satellites as well as for NOAA and landsat spacecraft. The IRS mission operations control centre is located at Bangalore.

Space Science

Research in the space sciences is based at the Physical Research Laboratory (PRL), with significant research and development being carried out by the Space Physics Laboratory (SPL) at VSSC and the Technical Physics Division (TPD) at ISAC. The near-earth environment, upper atmosphere and such earth relationships are some of the main areas of interest. Importance is also given to research in cosmic rays, astrophysics, infrared astronomy, meteorites, Lunar samples, geocosmophysics and plasma physics. The Udaipur Solar Observatory focusses on research in solar physics. In addition, research in space sciences is also supported in several institutions by the multi-agency Indian Middle Atmosphere Programme (IMAP) and the Advisory Committee for Space Sciences (ADCOS).

Sponsored Research

Under sponsored research called 'Respond' initiated in 1976, so far around 200 research and development projects have received support in about 75 institutions, universities, research centres and IITs, regional engineering colleges and a few industries, in areas related to space science, technology and applications. The space technology cell at IIT Bombay, is primarily for research in remote sensing; the space technology cell at IIT Madras will concentrate on R and D in the areas of launch vehicle technology, space communications techniques, the development of advanced chemicals and polymers for space applications.

Technology Transfer

Ten years ago, ISRO commenced dissemination of knowhow to industries to market the "Spin Offs" of the National space efforts. Over the years, the transfer of technology to Indian Industry has intensified. The ISRO also provides consultancy services to the industrial and technology sectors of the country and symbiotically utilises the expertise and infrastructure available with these sectors for obtaining the goods and services as well as developing new technologies required for the space effort. 102 products and processes have been transferred to industry; of these 75 are under regular production. In addition, 70 new items are in the pipeline for technology transfer. Knowhow transferred to industry so far covers chemicals, polymers, special materials, instruments, telecommunications, TV equipment, electronic sub-systems, electro-optic hardware, computer software and special purpose machines.

Space Centres and Units

The centres and units of the Indian Space Research Organisation (ISRO) provide the forward thrust in all the fields of endeavour in space science, technology and applications. Each major

developmental project of the programme is coordinated by a lead centre of ISRO, drawing major participation from other centres and units, apart from industry, academic and other national institutions. The IRS Project epitomises this feature, synergistically interlocking the efforts of ISAC, VSSC SAC, NRSA, SHAR, ISTRAC, and LPSU, major Indian industries, national research institutions, Central state user agencies and providing a viable platform for the emerging National Natural Resources Management System (NNRMS).

The Vikram Sarabhai Space Centre (VSSC) at Trivandrum, the largest of the ISRO centres and the main technology base of the programme, primarily provides the thrust for indigenous launch vehicles technology. The SLV-3 was designed and developed by VSSC and so are the SLV and PSLV. The VSSC also supports TERLS, India's international sounding rocket range and manages ISRO's Rohini Sounding Rocket (RSR) Programme. The RSR Programme coordinates development, production and launch of the Rohini series of sounding rockets for upper atmospheric and meteorological research. VSSC has advanced mechanical, chemical, material and electronics facilities to meet the fabrication, simulation and testing needs of the on-going projects and programmes. An Ammonium Perchlorate plant is located in Alwaye, Kerala. VSSC's new extension, the Valiamala complex has originated from the major needs of the PSLV. Beyond ASLV and PSLV, the next major step of VSSC will be the development of the Geostationary Launch Vehicle (GSLV) with the cryogenic upper stage to launch the indigenous second generation INSAT-II spacecraft.

The ISRO Satellite Centre (ISAC), Bangalore, is the satellite technology base of the Indian Space Programme. It is responsible for the implementation of indigenous spacecraft projects for various scientific, technological and applications missions. To this end, the Centre has been carrying out design, fabrication, testing and management of satellite projects and has successfully completed eight spacecraft projects.

The SHAR Centre, Encompassing the Sriharikota Island in Andhra Pradesh on the cost of India, is the main operational base of ISRO and runs ISRO's satellite launching range. The centre includes ISRO's Range Complex (IREX), Static Test and Evaluation Complex (STEX), Solid Propellant Space Booster Plant (SPROB), SHAR Computer Facility (SCOF), Programme Planning and Evaluation Group (PPEG), SHAR Central Designs, Reliability and Quality Assurance Group and Sriharikota Common Facilities (SCF). IREX comprises the SHAR Launch Complex as well as TERLS and Thumba and the Balasore rocket launching station STEX and SPROB constitute ISRO's largest static testing and solid propellant production facilities.

The primary tasks of Space Applications Centre (SAC), Ahmadabad, are to conceptualise, plan and execute projects and conduct research leading to practical applications of space technology. The SAC's main areas of activity are satellite based telecommunications and TV, remote sensing for natural resources survey and management, environmental monitoring, meteorology and geodesy. SAC has contributed significantly to the development of applications payloads for ISRO's remote sensing and communications spacecraft, the utilisation of ground systems and the applications techniques for satellite communications and remote sensing.

The Liquid Propulsion System Centre (LPSC) with the divisions at Bangalore, Trivandrum, and Mahendragiri is responsible for the design, development and supply of liquid propulsion control packages and engines for launch vehicles and satellites. The LPSC is equipped with precision and special fabrication, integration and test facilities. The test facilities for testing liquid propellant rocket

engines and located at Mahendragiri in Tamil Nadu.

Development and Educational Communication Unit (DECU) at Ahmadabad, in close cooperation with Doordarshan/Ministry of Information and Broadcasting, is responsible for the production of developmental and educational TV programmes, related research and training especially in support of INSAT services.

National Remote Sensing Agency (NRSA) at Hyderabad, an autonomous registered society, utilises modern remote sensing techniques for assistance in the planning and management of the country's nature resources and provides operational support to various uses. NRSA has equipment for surveying, identifying, classifying and monitoring several types of earth resources. The main centre is located at Balanagar and the satellite earth station in the Shadnagar Complex. The Indian Institute of Remote Sensing (IIRS) Dehradun, is a part of NRSA and is the main training centre in the country for remote sensing and aerial photo interpretation techniques and courses.

Physical Research Laboratory (PRL) at Ahmadabad, a grant-in-aid institute of DOS is the premier national centre for research in space and allied sciences. The main research programmes are in solar planetary physics, infrared astronomy, geocosmophysics, theoretical physics including climatology, plasma physics and laboratory astrophysics, archaeology and hydrology. PRL also manages Udaipur Solar Observatory.

Electronics

The electronics industry in India was nucleated in the late forties with setting up of production base for radio receivers by a few private firms using foreign collaborations. In the initial stages, the production activities were mainly in the field of consumer electronics and certain type of components. Two public sector units namely, Bharat Electronics Limited and Indian Institute of Technology both at Bangalore, were also manufacturing professional electronic items to meet the requirements of P and T. Introduction of transistor radio in early 60s lead to a phase which witnessed steady growth in production of import substitutions, diversification of product range and entry into export market.

Production of electronics equipment and components has come a long way since the days of radio receivers in the 1950s. The electronics industry in India has grown with domestic demand, as a result of import substitution efforts. The production of electronics which was worth about Rs. 15 crore in 1960 increased to Rs. 3,460 crore in 1986.

Strategy for Development

During the 70s electronics industry in the country derived its strength as a labour intensive industry. Production volume was low as the industry was getting off the ground. The production techniques had large manual labour content. Dispersal of industry was given an important place in the promotional policy framework and industrial capacities were approved based on the estimated demand over the next five years. In the growth and development of this industry, emphasis was placed on indigenisation and applications of electronics. While on one hand, this had enabled development of largely self-reliant consumer electronics industry (except from 1982 onwards when policy decision was taken to introduce colour TV and resulted in import of CTV tubes and semiconductors required for assembly), it has generated enough demand of component to enable mass production using some degree of automation.

Production

During the last three years, electronics industry has been making impressive strides in both equipment and component sectors recording a very large increase in production. The total production of electronics in 1986 was worth Rs. 3,460 crore compared to Rs. 2,660 crore in 1985 and Rs. 1,890 crore in 1984. Thus, the growth rate achieved during 1986 was 30.1 per cent compared to 40.7 per cent during 1985 and 39 per cent during 1984. It is important to recognise that over a long term, it is generally difficult to sustain high growth rates specially when the production base becomes very large. Presently, the world electronics production is placed at \$ 400 billion and is growing at an annual rate of about six per cent only.

For various plan schemes under the Department of Electronics, Planning Commission has approved a total annual plan outlay of Rs. 137 crore. The public sector corporations have been provided budgetary support of Rs. 18.5 crore. As a major thrust to computerisation activities in the country, National Informatics Centre has been allocated a sum of Rs. 350 crore compared to Rs. 20 crore allocated in 1986-87 Annual Plan. The other major areas for which resources have been provided include : Training of Manpower both for Computers and Electronics; Standardisation Testing and Quality Control Programme; setting up of Electronic Design Technology Centres; Industrial Electronics Promotion Programme, etc. For Science and Technology programmes, a sum of Rs. nine crore has been allocated.

Most of the allocated resources are meant for various ongoing projects/programmes. Like 1986-87, this year also the emphasis is allocation of resources and to further intensify efforts in high technology areas and develop further applications to electronics as well as manpower development.

The highlighting feature of the growth during last few years has been the fact that there has been a substantial fall in prices of items like computers and some of the components. Thus, in physical terms, the growth is higher than indicated by monitoring growth.

Table 2.4
Production of Electronics

Sl. No.	Sector	Growth (Rs. in Crore)		Growth Rate (Percentage)	
		1985	1986	1985	1986
1.	Consumer Electronics	1,030	1,275	75.5	23.8
2.	Control Instrumentation and Industrial electronics	404	525	20.6	30.0
3.	Computer Systems	155	280	68.5	80.6
4.	Communication and Broadcasting	380	504	18.0	32.6
5.	Aerospace and Defence	196	222	31.5	13.3
6.	Electronic Components	410	510	35.3	24.4

Production Base

The production base of electronics industry consists of over 2,500 units spread over public sector (both in centre and state), organised private sector and small scale sector and a number of unregistered smaller units mainly doing assembly of consumer electronics products. The main contribution of production (accounting for over 75 per cent of the total output) comes from 250 major units of which over 100 units are in small scale sector. An analysis of contribution of different sectors in total production for the year 1986 shows that public sector units account for 32 per cent of the total production and remaining 68 per cent comes from the units in private sector.

Exports

India is emerging as one of the major exporting countries for electronic goods. From a mere Rs. there crore of export of electronic items in 1968, a spiral performance of Rs. 240 crore has been achieved in 1986. To take advantage of growing world trade, a cent per cent export oriented zone (SEEPZ) was set up in Santacruz, Bombay. Export of computer software has emerged as one of the single largest export item where in 1986 India has achieved an export of Rs. 42 crore. A separate Electronics and Software Export Promotion Council has now been set up. Major export markets for Indian electronics are USA, USSR and Far-East Asian countries.

Investments in Electronics

The investments in various sectors are increasing rapidly, especially in the areas of communication, computers, components, etc. A number of programmes are under implementation to promote the use of electronics in the key sectors of the economy. Some of the important ones are: (i) project for computerisation of steel plants operations; (ii) a project for demonstrating the benefits through the use of electronics at two thermal power stations; (iii) computerised passenger reservation system; (iv) the freight operations information system for the railways to improve utilisation of the railway assets as also to reduce the time period of transporting the commodities; (v) growth in the telephone network based primarily on the electronics switching system; (vi) information flow on developmental and planning activities in the country through the district level computes network (NICHET); (vii) computers for use in the front office operations of the banks; and (viii) in the traditional industries such as sugar, use of electronic operations.

Policy Measures

A number of specific steps have been taken to accelerate the growth of electronics in the country. The basic thrust of the policy is general rationalisation of the licensing policy, with an emphasis on promotion rather than on regulation. By and large, no upper limit is prescribed on capacity and no restriction of a sectoral nature: large scale, small scale, private sector, public sector, etc., is prescribed except where specific reservations are made on very special considerations. Achieving economies of scale with up-to-date technology has been the major objective of this sector. The following specific policy measures taken recently have played a significant role in the growth of this sector : (a) for a number of categories, "broadbased" licences have been issued; (b) the electronic components industry has been delicensed. Also consumer durables are delicensed subject to the condition that the units would not draw upon resources from the financial institutions; (c) the import of technology and foreign collaboration will be permitted in all areas of electronics. Units having foreign equity less than 40 per cent will be permitted in all areas; (d) for telephone instruments, electronic PABX systems and rural automic exchange, the technology will be acquired on a centralised basis to achieve economies

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of scale; (e) developments of small scale industry is being particularly encouraged. Approvals for a number of items have been decentralised to the level of state Directorate of Industries. Investment limit for this sector has been revised to Rs. 35 lakh and that for ancillary units of Rs. 45 lakh; (f) electronic units will be allowed to be established in any permissible location; (g) in order to achieve economies of scale in certain key areas, certain components which were reserved for small scale sector have been dereserved; (h) private sector has been permitted to enter areas of telecommunication, manufacture of telephone EPABX teleprinters, facsimile equipment, data communication terminals, etc. Other items can also be taken up by the private sector with Central/state government participation of at least 51 per cent equity shares; (i) in almost all areas of electronics, excluding consumer electronics, MRTP companies have been exempted from clearance under Sections 21 and 22 of MRTP Act; (j) a computer policy has been announced with emphasis on the manufacture of computers based on latest technology at prices comparable with international level and progressively increasing indigenisation consistent with economic viability; (k) a new software policy has been announced to encourage production and export of software; (l) import duty on raw materials, components and capital equipment has been reduced. A fiscal package has been announced for component industry; which has rationalised the duty on raw materials, parts and semi-finished goods; (m) the import policy has been rationalised with a view to increase production; and (n) the Government is promoting appropriate applications of electronics to improve productivity, quality, safety and quality of services.

Technology Development

A need for strong R and D in the area of electronics activities in India has been recognised because of critical applications of electronics in all major national programme; India follows the approach of self-reliance particularly in critical areas; and the rate of obsolescence for electronics technology is very high.

India has a strong R and D base in electronic through various laboratories under Departments of Space, Atomic Energy, Defence R and D, Ministry of Communication and other user Ministries, IITs and academic institutions. Besides these, a number of production agencies have strong in-house R and D groups.

Technology Development in India is being supported by the Department of Electronics of the Government of India mainly through two mechanism, namely the Technology Development Council (TDC) and the National Radar Council (NRC).

Till today, Technology Development Council has supported about 300 projects spread over 90 organisations. About 35 projects have already resulted in production and are being commercially productionised by the industry. Other completed projects have created conducive research atmosphere, enhanced the capability for absorption and upgradation of imported technology, spinoffs to major national programmes. Some of the technologies transferred to production during the year 1986-87 include : graphics and Indian scripts terminal (GIST), X-ray on plain paper, silver paste and glass material, electronic system for mine winder.

During 1986-87 the TDC initiated : development of quality control instrumentation for paper and pulp industries, microcomputer controller horizontal, angular, vertical and rotating motions in process control applications; development of OMC system for EIOB exchange, R and D for electronics education using computer aids; and machine translation among Indian languages based on artificial intelligence techniques.

Recently, a high powered National Microelectronics Council (NMC) has been set up to coordinate and promote, inter-alia, R and D technology development in the vital and strategic areas of micro-electronics. In addition to these mechanisms, major thrust areas for technology development have been identified, e.g., electronic switching systems; LSI/VLSI; computer architecture; software engineering; special microwave products; ultra pure silicon, etc.

One of the major achievements has been the enhancement of technological base and capabilities in the country. Between 1973 and 1987, Department of Electronics has spent over Rs. 63.5 crore involving 400 project in the area of technology development. These projects have been sponsored to over 100 organisations involving R and D laboratories (over 100 projects), education institutions (about 200 projects) and public sector industrial units (about 100 projects). About 275 projects have already been completed. For 50 projects in R and D laboratories and academic institutions, knowhow has been transferred to production agencies. Many of the projects sponsored in industrial units have gone into production of electronic systems incorporating latest technologies, while the others have helped to build R and D culture and specialist manpower in the area of electronics.

Testing Facilities

The Department of Electronics has launched a Standardisation Testing and Quality Control (STQC) Programme. Under this programme, a countrywide integrated network of testing and calibration, three-I echelon structure with Electronics Test and Development Centre (ETDCs) working as per Echelon-III level, Electronics Regional Test Laboratories (ERTLs) working as per Echelon-II level, and the Primary Calibration facility at National Physical Laboratory (NPL), New Delhi, operating as per Echelon I level have been in operation. The National Measurement Assurance Programme is also being organised for the electronic discipline that would ensure compatibility and traceability in measurements from industry level to the national level and ultimately to the international level.

At present 15 ETDs are functioning in various states generally in the proximity of a cluster of small and medium scale industries. Four ERTLs are located in Delhi, Bombay, Calcutta and Bangalore to cater to the requirements in the respective regions.

About 55 manufactures of colour television have been approved under the limited approval scheme in pursuance of industrial licence policy for colour television receivers. Specifications for personal computer system comprising of 8-bit personal computer, colour video monitors, floppy disc drive, keyboard and printer, etc., have been finalised with the active involvement of the industry and based upon actual testing wherever applicable. A certification scheme for personal computer, associated peripherals and dedicated components has also been finalised.

India has been admitted as a member under IEC-QA system and all four ERTLs have been enrolled as members of "Exchange of Authenticated Electronic Components Performance Test Data (EXACT)" Organisation. This has resulted in exchange of data on test report of international products/components tested by leading international manufactures organisations.

Geographical Spread of the Industry

From a situation where a few years ago, electronics industry was essentially concentrated in a few places in the country (Pune-Bombay belt, Bangalore, Hyderabad and surrounding Delhi), the electronics has now come to be widely disbursed throughout the country. While in 1971, Maharashtra and Karnataka states accounted for 76 per cent of the production of electronics goods and the share of remaining

states was only 24 per cent, in 1985 the share of the states have increased to 65 per cent. Over 15 states have set up states electronics development corporations. These corporations are helping in promotion and development of electronics in respective states. Most of the states are now providing special incentives like exemption of sales tax, creation of separate industrial areas for electronics, subsidy for setting up units in backward areas, financial participation either as joint sector or assisted sector, etc., so as to encourage speedy development of this industry.

Manpower Development

Highly specialised and trained manpower and a continuous updating of this manpower stock are of crucial importance for the growth of electronics. The working group on electronics manpower set up by the Government of India has estimated the total manpower requirement for electronics industry by terminal year of the Seventh Five Year Plan as 5,20,000. A number of special manpower development programmes have been initiated and specialised courses have been designed which are being implemented through UGC. Centres for Electronic Design Technology (CEDT) have been imparting training to engineers in latest design technique in Electronics.

It is recognised that the paucity of computer science and engineering personnel is going to be a serious manpower bottleneck in the coming years. The department has, therefore, initiated several steps to meet growing requirements.

Electronics in Education

Availability of cheap micro computers is transforming the spectrum of social and economic activities the world over. The knowledge and use of computer is thus becoming a crucial input in rapid socio-economic development. This has to begin at the school level. School children need to be provided with an opportunity to have hands-on experience on micro-computers and to develop manipulative skills, so that they appreciate at a young age, the potential as well as limitations of computers.

In pursuance of these objectives, the Department has launched a pilot project "Computer Literacy and Studies in Schools (CLASS)" in close collaboration with the Ministry of Human Resources Development. During 1984-85, 250 schools were covered under this programme. Also 42 Resource Centres were established. To provide technical and other back-up services to schools including training of teachers and monitoring of the programme 500 schools and eight Resource Centres were added during 1985-86. The eight-bit single board computer ACORN is being used in this programme. Results of the evaluation of the pilot project indicates that the objectives of the CLASS project such as demystification, familiarisation and providing hands-on experience to the students have been fully achieved.

National Information Centre

National Informatics Centre (NIC) was set up in March 1977 to play a promotional role in creating appropriate information system in Government Departments/Ministries to catalyse decision making in Government. The hub of NIC network so far has been large computer system CYBER CDC 170/730 acquired and installed in May 1980 with the assistance of UNDP. The system is connected with 60 interactive terminals and 12 mini-computer terminals. NIC has regional facilities at Bombay, Madras and Calcutta. Comprehensive training of internal programming staff and of the users of NIC facilities has been one of the important activities of the NIC. About 1,000 users are presently availing of the

services of the NICNET, 75 per cent of these users belong to the Central Government offices and public sector organisations. Nearly 400 Government and 300 non-Government projects have been registered with NIC. The NIC host computer system has been operational round the clock with an average uptime of 98 per cent.

Centre for Development of Telematics (C-DOT)

The C-DOT was set up in August 1984 with the objective of developing a state of the art Digital Switching System (DSS) suitable for Indian environment with capability for future introduction of ISDN. The family of Digital Switching System includes Private Automatic Branch Exchange (PABX), Rural Automatic Exchange (TAX), Main Automatic Exchange (MAX) and Trunk Automatic Exchange (TAX) which are in a variety of configurations from 128 to 40,000 ports. Design and development of PABX and RAX versions of terminal module of the C-DOT main switch has been completed. 30 manufacturers for 128 port PABX with (C-DOT) technology are in the process of procuring capital goods through ET and T. RAX is self contained system meant for rural areas and was put on field trial in Kittur in Karnataka during July 1986.

CMC LTD

CMC Ltd. provides a whole range of computer support services comprising hardware maintenance, installation and commissioning of system, computer centre service, systems consultancy, software development, programmes and research and development. It provides hardware maintenance support to various equipment supplied by over 30 manufacturers. CMC Ltd. is coordinating the implementation of project INDONET which is an integrated information management and distributing data processing facility spanning the entire country. CMC's consultancy and technical expertise includes application like : computerisation of railway passenger reservation systems; economic load dispatch management systems for electricity generating units; computerisation of banking operations; automatic message switching systems, ticketless trunk exchange in the field of telecommunications; computerised fingerprint identification systems for the central and state fingerprint bureaux; crime detection systems for police organisations; computer-based environmental monitoring systems, etc.

Electronics Trade and Technology Development Corporation

Electronics Trade and Technology Development Corporation (ET and T) was set up with the objectives of expanding foreign trade in electronics and undertaking development of technology in key areas. In addition, ET and T is responsible for monitoring the requirement of industry and buying in bulk to provide large measure of support to the electronic industry in its growth.

The Corporation has taken up a new innovative programme of self-reliance known as MTB programme with the objective of providing substantial assistance to small scale production units to manufacture cost effective products of contemporary design and conforming to high quality standards. Under this programme 14 inch Black and White TV sets are being manufactured by about 50 units in the country. The *Margdarshan Programme* taken up by ET and T provides software package in the form of educational video tapes for community development, like fundamentals of electricity, safety in electrical work, safety from fire hazards, colour TV, cobbling and film on antenna, etc.

Semiconductor Complex Ltd. (SCL)

Semiconductor Complex Ltd. (SCL) was set up with an objective to design, develop and manufacture LSI/VLSIs circuits, modules and sub-systems for telecommunication, data processing,

consumer electronics and for defence/strategic applications. SCL commenced its commercial production in April 1984. SCL has been able to develop three micron CMOs technology and has productionised the clock LSI devices. With this the die yield of clock device has been improved to 2,000 dies on a four inch milicon wafer against an average of 800 in five micron CMOs technology. Two clock devices with alarm facility have also been productionised to meet the requirement of clock movement manufacturers. In addition, SCL has started the wafer processing of R 6502 eight-bit microporcessor, R 6522 versatile interface adapter for R 6532 RIOT LSI devices during the year. The production of codec LSI devices has been initiated which are used in electronic exchanges and telecom equipments.

Under Modules and Sub systems, SCL manufacture eletronic circuit block for clock and analog watches, module for digital electronic watches under Unicom eight-bit Module micro-comuter. In clock ECBs, they have been able to produce all the components except capacitors indigenously and are manufacturing 15 types of clock ECBs for supplying to various clock movement manufactures. SCL has set-up a facility for assembly of QAB-ECB from component level.

Council of Scientific and Industrial Research

The Coucil of Scientific and Industrial Research (CSIR), constituted in 1942 by a resolution of the then Central Legislative Assembly, is an autonomous body registered under the Registration of Societies Act, 1860. The functions assigned to the Council are :

- (1) promotion, guidance and coordination of scientife and industrial research in India, including the institution and financing of specific researches;
- (2) establishment or development of and assistance to special institutions or departments of existing institutions for scientific study of problems affecting particular industries and trades;
- (3) establishment and award of research studentships and fellowships;
- (4) utilisation of the results of the researches conducted under the auspices of the Council towards the development of industries in the country;
- (5) establishment, maintenance and management of laboratories, workshops, institutes and organisation to further scientific and industrial research and to utilise and exploit for purposes of experiment or otherwise any discovery or invention likely to be of use to Indian industries;
- (6) collection and dissemination of information in regard not only to research but also to industrial matters generally;
- (7) publication of scientific papers and journals; and
- (8) any other activity or activities to promote generally the objects of the resolution.

The Department of Scientific and Industrial Research in the Ministry of Science and Technology provides the administrative link between the Government of India and the Society,

CSIR today is an integrated network of 39 research laboratories/institutes¹ with over 100 regional centres spread all over the country. CSIR carries out research of value not only to industry but also to other sectors of the economy such as agriculture, irrigation, health, mining, power utilities, transport and defence, besides basic research. CSIR's expertise and experience is embodied in 5,000 highly qualified scientists and technologists supported by an additional 13,000 skilled scientific and technical backup personnel.

CSIR has the expertise to form special inter-disciplinary, inter-laboratory groups to tackle specific research problems; for example, a consortium formed from four CSIR and two foreign organisation is rendering consultancy to ONGC on optimisation of crude flow through submarine pipelines; a group of four CSIR laboratories is rendering consultancy to the Coal Indian for environmental planning and the Central Warehousing Corporation on safe storage and handling of hazardous chemicals.

Assistance to Industry

The inter-disciplinary expertise generated over the years by CSIR helps the industry in various ways. Some of them are :

- (i) assessment of technology options, including technology assessment and choice of technology;
- (ii) absorption, adaptation and updating of imported technology;
- (iii) identification of areas of R and D that will maximise returns including R and D project definition, planning and programming;
- (iv) productivity improvements through cost reduction energy conservation and waste utilisation;
- (v) substitution of imported raw-materials, components and processes;
- (vi) pollution and effluents control, including location of safe discharge points;
- (vii) repair and maintenance;
- (viii) trouble shooting, condition monitoring and maintenance scheduling, computer simulation and modelling;
- (ix) optimisation of construction cost through application of novel technological designs;
- (x) analysis, interpretation and validation of results and data;
- (xi) laying down of standards and test protocols, quality assurance;
- (xii) survey of literature and state of art reports; and
- (xiii) feasibility studies and project reports and analysis.

Achievements

Some of the latest significant achievements of CSIR are :

- (a) A 40 KVA three phase PWM thyristor AC motor specially developed for mining locomotives has been successfully field-tried by Central Electronics Engineering Research Institute (CEERI), Pilani in a mine of the Khetri Copper Mines;
- (b) Microprocessor-based systems for monitoring brix, purity and saturation at pan station (MIPMOS) and automatic pH and liming control for juice classification (MAPCON) and automatic 24 point temperature monitoring and energy economisation system were successfully tried by CEERI at the Kisan Sahakari Chini Mills, Anoopshahr (UP);
- (c) An analog model of a seismograph and an observatory model of a digital cassette seismograph were completed by Central Scientific Instruments Organisation (CSIO), Chandigarh. These have successfully undergone user's acceptance tests at the India Meteorology Department (IMD), Delhi;
- (d) A new kimberlite--primary source rock of diamonds was discovered about 10 km east of

Lattavaram in the Anantapur district of Andhra Pradesh by National Geophysical Research Institute (NGRI), Hyderabad by the scientists using the stream sediment sampling technique. The size and shape of the kimberline was delineated by drilling and trenching. A gem-quality diamond (eight mg) was found by the Geological Survey of India upon processing three tonnes of the material from this kimberlite;

- (e) Encilite-1, and zeolite catalyst developed by National Chemical Laboratory and produced by the Associated Cement Co. (ACC) was used by the Indian Petrochemicals Corporation Ltd. (IPCL) for catalytic isomerization of metaxylene. The process known as xylofining leads to higher levels of production at lower cost of intermediates;
- (f) The catalyst developed by National Chemical Laboratory (NCL) is as least equivalent to, or perhaps better than, the best available today, and marks India's entry in the highly competitive area of high-tech catalytic processes. The combined efforts of NCL, ACC and IPCL were recognised through a prestigious award of the Indian Chemical Manufacturers' Associations to IPCL;
- (g) The aromatics extraction plant of Bharat Petroleum Corporation adopting the technology jointly developed by Indian Institute of Petroleum (IIP, Dehradun and Engineers India Ltd. (EIL) was formally inaugurated on 31 January 1986. Test runs carried out by IIP and EIL have shown that the products guarantee specifications. Efforts made by IIP and EIL in developing this technology have been recognised by a special citation awarded by the Indian Chemical Manufacturers' Association. Technology for production of benzene and toluene from straight-run naphtha has also been licensed to Haldia Petrochemicals Corporation and process engineering works has been completed;
- (h) A pilot plant for the production of Gallium from Bayer's liquor based on Central Electro Chemical Research Institute (CECRI) technology was commissioned by M/s MALCO, Mettur Dam. It has an installed capacity of 30 kg per year;
- (i) The sixty lakh rupee plant in Rourkela, put up with CECRI technology for the production of electrolytic chromium has been regular production. It has an installed capacity of 30 tonnes per year, valued at Rs. 50 lakh;
- (j) NAL's all-composite Light Canard Research Aircraft (LCRA) has made a successful first flight;
- (k) A laboratory prototype of xeroradiographic machine has been developed National Physical Laboratory. The xeroradiographic technique can be used with any existing X-ray unit to expose a selenium-coated photo-receptor plate instead of X-ray film. Its adoption would provide cheap X-ray facility to the common man;
- (l) A new Scanning Electron Microscope (SEM) having a resolution of $75 \text{ \AA}$ has been developed by CSIO.

In the area of basic research a break-through in super conductivity has been reported by NPL. Significant developments have been reported in the areas of Catalysis (NCL). Biochemical Sciences (CDRI), Toxicity of Metals (ITRC) and Cellular and Molecular Biology (CCMB). Two large national facilities--Acoustic Test Facility (ATF) for space vehicles and satellites and a Computer-Aided Design (CAD) System for footwear design have been installed and commissioned at NAL Bangalore

and CLRI Madras respectively, during 1986.

Ocean Development

For centuries, the people of India have been using the seas around the Indian sub-continent for transport, communication and food. During the last few years, the exploration and exploitation of the living and non-living resources of the seas have acquired a new thrust. The new Ocean Regime established by the United Nations Convention on the Law of the Sea 1982, which has been signed by 159 countries including India and ratified by 28 countries plus, the United Nations Council for Namibia, as of 5 May 1986, assigns much of the world ocean to exclusive economic zones where coastal States have jurisdiction over the exploration and exploitation of resources and for other economic purposes. The wide use of these resources, both living and non-living, now pertaining to the coastal States will require scientific knowledge. The need for scientific research in the off-shore areas and the need for understanding oceanographic process is widespread and provides strong justification for enhanced national efforts.

Recognising the importance of oceans in the economic development and progress of the nation, the Government set up the Department of Ocean Development in July 1981 for planning and co-ordinating oceanographic survey, research, and development of manpower and marine technology. The Department management of ocean data and resources, development was entrusted with the responsibility of looking after marine environment on the high seas. The policy objectives of ocean development were announced in Parliament in November 1982.

The main thrust areas in the ocean sector have been Antarctic research, promotion of survey and optimum utilisation of living and non-living resources, harnessing of renewable sources of energy and the exploration of polymetallic nodules from the deep seabed.

The Department of Ocean Development has acquired two sophisticated oceanographic research vessels, ORV Sagar Kana (June 1983) and FORV Sagar Sampada (November 1984). These vessels are among the most modern oceanographic research vessels with advanced facilities for working in the field of physical, chemical, biological, geological and geophysical oceanography and meteorology. Sagar Sampada is a multipurpose vessel with long endurance and operational range capable of working in the 200 nautical miles exclusive economic zone of India and beyond and also in the South Indian Ocean up to 65° S latitude to provide good support to India's Antarctic programmes. Within a short span of five years, the Department has made considerable progress and taken steps to enhance the country's capabilities in ocean sciences and has provided inputs to several institutions in the country.

Antarctic Research

Until very recent times, there was little interest in Antarctica except among scientists and those few countries undertaking scientific research activities there. The international awareness of Antarctica's marine and mineral resource potential has grown during late 1970s. Recent Antarctic studies have aroused interest of both developed and developing countries to know more and more about the resources of Antarctica and to exploit the living resources of the surrounding seas for the benefit of mankind. India entered the field of Antarctic research in 1981 and since then, the Department of Ocean Development has sent six scientific expeditions to Antarctica.

The various scientific programmes of Antarctic research include studies in the fields of meteorology, radio wave propagation, geology, geophysics, oceanography, marine biology, microbiology, upper

atmosphere chemistry and glaciology. The scientific work is carried out on voyages to and from Antarctica, at the sites of mooring of the ship, at the permanently manned station (Dakshin Gangotri), and at the Schirmacher Hill region. During the previous six expeditions a good deal of information, data and material has been collected. By virtue of its scientific activities in Antarctica, India was admitted as a Consultative Member of the Antarctic Treaty of 1959, in September 1983. India became a member of the Scientific Committee on Antarctic Research in October 1984.

India also acceded to the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) with effect from 7 July 1985 and participated in the fourth annual meeting of the Commission in September 1985 as observer and as a full member of the Commission in September 1986.

The fourth expedition which sailed from Goa on 4 December 1984 had 83 members, including one scientist from Mauritius. During this expedition, a direct High Frequency Communication link was established. A small station consisting of three cottages in the hills at a distance of about 70 km from the present permanent station was built. Additional accommodation for laboratory space and garage for parking of snow vehicles and for storage of equipment was added to the permanent station.

The twelve-member first winter team, which was left behind by the third expedition and which stayed in Antarctica throughout Antarctic winter was relieved of its duties and brought back to India. A new team of 13 members was left behind for winter work. The fourth expedition also included a six-member team with the requisite equipment and vehicles for undertaking reconnaissance work preparatory to a South Pole expedition later.

The fifth Indian expedition to Antarctica with a team of 88 members sailed from Goa on 30 November 1985 and landed on Antarctica on 24 December 1985. The scientific component of the expedition included 21 members, including two women scientists, drawn from 12 different institutions. The logistic component consisted of 7 persons from the three Services.

The expedition returned after 9 days stay in the icy continent and after accomplishing the scientific and other objectives set for it. The expedition brought back the second wintering team left behind by the fourth expedition. A 14-member new team consisting of four scientific personnel and 10 from the Services to provide logistic support was left behind for winter work.

The Sixth Indian Antarctic Expedition sailed from Goa on 26 November 1986 and landed on Antarctica on 21 December 1986. The scientific component of the team consists of 18 personnel for the summer work and six for the winter work. As in the past the logistic support will be provided by the personnel from the three Services.

The performance of a windmill at the Maitri Station during the summer for generation of energy was under study during the period of this expedition.

The purpose and objective of the Indian Antarctic research is to identify and initiate studies and programmes which are of significance in scientific and economic terms and to establish infrastructural facilities and expertise which would enable India to sustain and expand its activities. Successful commencement of the Antarctic programme has brought many Indian scientific institutions on a common platform and enabled India to participate and contribute effectively in international negotiations on Antarctic issues.

The Department proposes to set up an Antarctic Study Centre with appropriate logistic base facilities. The Government of Goa has allotted a site of 18 acres for the proposed Antarctic Study Centre in Goa. Steps are being taken to develop the land for this purpose. The first phase of the establishment of the Study Centre is expected to be completed during the Seventh Plan period.

Living Resources

India with a long maritime history of the exploitation of living resources from the sea, occupies the eighth position in the world in regard to the total annual catch of fish. As per the need-based demand projections, the fish requirements of India's population by 2000 A D are estimated to be 114 lakh tonnes. At present 56 per cent of the total annual catch of about 30 lakh tonnes of fish is harvested from the seas. India with an extensive coastline of nearly 6,000 km and a vast exclusive economic zone of over 20 lakh sq. km exploits about 46 per cent of the total catch of the living resources from the Indian Ocean. The potential annual fish catch from the sea is estimated to be about one crore tonne.

Systematic Survey and exploration of marine living resources in exclusive economic zone of India and in the open ocean space using the oceanographic research vessels ORV Sagar Kanya and FORV Sagar Sampada is one of the major objectives of the Department. The area of operation of these vessels covers the Arabian Sea, Bay of Bengal and the Central Indian Ocean down to 20° South Latitude. ORV Sagar Kanya spent 235 days at sea during the period from July 1983 until June 1984 and spent 298 days between July 1984 and June 1985, which correspond to a utilisation of 82 per cent. The effective utilisation of the scientific capacity at sea was 76 per cent. Scientists representing 17 organisations and institutes took part in the research cruises. FORV Sagar Sampada was utilised as intensively as ORV Sagar Kanya for assessing the marine fishery resources of the exclusive economic zone. The Vessel had completed 20 cruises by September 1986.

Human activities on shore and at sea affected the marine environment. India uses about 34,000 tonnes of pesticides and about 11,000 tonnes of synthetic detergent annually. It is estimated that 25 per cent of this volume find its way to the sea. The discharge of domestic sewage to Indian coastal waters is estimated at about five crore cubic meters annually. The present research and monitoring activities in the marine environment include measures to protect the coastal ecosystems against pollution effects.

Deep Sea Mining

On 17 August 1987 the 36-member General Committee--executive body of the Preparatory commission for the international Seabed Authority--unanimously decided to register India as the first Pioneer Investor under the Law of the Sea System embodied in Resolution 11 of 30 April 1982 and allotted a mine site of 1,50,000 square kilometers for further exploration and development in the Central Indian Ocean. This decision entitles India to explore and develop the resources of the deep seabed--in an area of 1,50,000 sq km--which contain rich deposits of polymetallic nodules and which are a source of important minerals like copper, cobalt, nickel and manganese. However, commercial exploitation of these resources will take place only in future after the requisite technology has been developed/acquired and after the UN Convention on the Law of the Sea has come into force. Allotment of a mine site for further exploration and development provides a "concrete indication of our indigenous scientific capabilities and achievements."

Desalination Programme

The desalination programme sponsored and funded by the Department of Ocean Development is being implemented by the Central Salt and Marine Chemicals Research Institute and the Bharat Heavy Electrical Limited. As a result of considerable research and development efforts made by the Central Salt and Marine Chemicals Research Institute, desalination technology has been standardised, using the process of reverse osmosis. This technology was made available to the Bharat Heavy Electricals Limited for the design and construction of plants for desalination of brackish water. The plan fabricated by BHEL offers simple and flexible method of purifying brackish water for drinking purposes. In addition to salt, the system also removes harmful matter and bacteria from brackish water. The energy saving in reverse osmosis, as compared to conventional thermal desalination system, also makes this process economically viable. Reverse osmosis systems are designed and fabricated in modular blocks, enabling fast erection and commissioning of the plant.

Manpower Planning

The problems of ocean science and engineering are not simple and those engaged in the study will need advanced university education. Recognising the fact that further education and training will prove to be a good investment for the nation, the Department has taken steps to promote the development of manpower resources through various educational institutions and research organisations.

A marine research and development fund has been created to encourage meaningful ocean-related activities in different institutions in the country.

Biotechnology

Biotechnology is a frontier area of science with promising possibilities in various sectors including agriculture, health, industry, energy and environment. The National Biotechnology Board was constituted as an apex body in 1982 to identify, coordinate and oversee priority areas of development in biotechnology, and to prepare and implement a coordinated programme in the multidisciplinary areas of biotechnology.

In recognition of the need for a focal point in the structure of the government for planning, promotion and coordination of activities relating to biotechnology, the Government set up a separate Department of Biotechnology in February 1986 in the Ministry of Science and Technology. The main responsibilities of this Department are : (i) to evolve programme for manpower development in the areas of biotechnology where there are gaps in competence; (ii) to establish infra-structural support at national level; (iii) to identify specific R and D programmes in biotechnology and biotechnology-related manufacturing production processes especially manufacturing and application of cell based vaccines; (iv) to evolve integrated plans and programmes in biotechnology; (v) to evolve, bio-safety guidelines for laboratory research, production and application; (vi) to initiate scientific and technical effort related to biotechnology; (vii) to serve as an inter-ministerial and inter-agency nodal point for all specific international bilateral and multi-lateral research and development collaboration agreements; (viii) to serve as a nodal point for technological transfers in the areas of biotechnology; and (ix) to establish International Centre for Genetic Engineering and Biotechnology.

The Department is assisted on policy issues and programmes by a Scientific Advisory Committee (SAC) of the Department.

To build up a pool of trained personnel in different areas of biotechnology, a programme for manpower development has been launched. The programme includes short-term training courses,

post-graduate training and associateship, etc. In collaboration with the University Grants Commission (UGC), post graduate (M.Sc. and M.Tech.) courses have been introduced in 13 selected universities and institutions. For building up necessary back-up support for research and development, a network of National Infrastructure Facilities have been set up. These include: (i) Microbial Culture Collection at the Institute of Microbial Technology, Chandigarh; (ii) Blue Green Algae at IARI, New Delhi; Plant Tissue Culture Collection at NBPGR, IARI, New Delhi; (iii) Animal House Facilities at CDRI, Lucknow; NIN, Hyderabad; and IISc. Bangalore; (iv) Animal Cell Line and Tissue Culture at Pune University, Pune; (v) Biochemical Engineering and Pilot Plant at Institute of Microbial Technology, Chandigarh; and (vi) Facility for Oligonucleotide Synthesis at IISc. Bangalore; CFB, Delhi; Delhi University, Delhi and CCMB, Hyderabad. In addition, a network of informative system with distributed information centres in eight selected institutions of the country is also being set up.

The Department is engaged on two Technology Missions and three S and T project in Mission Mode which are (a) vaccination and immunization of vulnerable section of the population especially children; (b) cattle herd improvement through embryo transfer technology; (c) oil seed production by raising high yielding clones of coconut and oil palm through tissue culture, (d) immunodiagnostic for early detection of diseases and control; and (e) fertility control.

The various programmes and schemes being undertaken by the Department are oriented towards application of biotechnology in the areas of public health, biomass, and fuel production, control of vector borne diseases, and development of new contraceptives for stabilisation of population growth.

Departmental Research

A number of Government departments carry out research in certain fields or other. Some of them are :

Geology

The Geological Survey of India (GSI) with headquarters at Calcutta is the principal agency entrusted with geological activities in the country. The GSI is responsible for the preparation of the geological, geochemical and geophysical maps (ground and airborne) of the country, including offshore areas. These are for the exploration and evaluation of all mineral deposits (except oil, natural gas and atomic minerals), for carrying out studies relating to geotechnical problems, for rendering expert technical advice to different engineering projects and for conducting geoenvironmental studies connected with mining, desert control, etc. The Department is carrying out research, both fundamental and applied, in varied branches of earth sciences, e.g., in the field of geochronology, stratigraphy, palaeontology, petrology, remote sensing, mineralogy, geochemistry, analytical chemistry and geophysics. It is also carrying out special investigations on geothermics, glaciology, seismology, etc. The results of the various activities carried out by Regions/Wings, are collected, collated, processed, and disseminated through information processing units, publications and map productions and data centres. Training programmes for developing the scientific manpower resources have been given a high priority in the Department and the training assistance is extended to other Indian Organisations and member countries of the ESCAP.

Meteorology

The India Meteorological Department organised on an all India basis in 1875, is the national agency for providing service in the field of meteorology. Meteorological data are collected from over fourteen hundred observatories of different types, including Data Collection Platforms, and are processed

by the Department. The Department, alongwith the Indian Institute of Tropical Meteorology (IITM), Pune, conducts fundamental and applied research in different fields of meteorology, such as, weather forecasting, meteorological instrumentation, radarmeteorology, seismology, agricultural meteorology, hydrometeorology, satellite meteorology and air pollution. The IITM has been conducting could seeding experiments for producing rain artificially.

The Indian Institute of Astrophysics (IIA), Bangalore, the Indian Institute of Geomagnetism (IIG), Bombay, and the IITM, Pund, which were formerly a part of the Indian Meteorological Department, have been functioning as autonomous institutes since 1971. The IIA conducts research in solar and stellar physics, radio astronomy, cosmic radiation, etc. The IIG records magnetic observations and conducts research in geomagnetism.

The Department funds research on monsoon meteorology by certain Universities. The Department also funds monsoon research by a Centre in the Indian Institute of Technology, Delhi. Monsoon Activity Centre established by the Department is functioning at New Delhi.

Meteorological and weather services are provided by the India Meteorological Department with Headquarters New Delhi and a functional Office responsible for climatology and forecasting at Pune. There are five regional meteorological centres at Bombay, Calcutta, Madras, Nagpur and New Delhi.

The Department has a Positional Astronomy Centre at Calcutta which compiles and publishes the Indian Ephemeris in English and Rashtriya Panchang in English, Hindi, Sanskrit and nine other Indian languages.

For better coordination with the state governments, meteorological centres have been set up in 12 state capitals, viz., Ahmadabad, Bangalore, Bhopal, Bhubaneshwar, Guwahati, Hyderabad, Jaipur, Lucknow, Patna, Srinagar, Trivandrum and Chandigarh. The Department maintains liaison with the Thumba and Balasore Rocket Launching Stations for meteorological rocket probes of the upper atmosphere. To render service to agriculturists, farmers' weather bulletins are issued daily since 1945 from regional meteorological centres at state capitals pertaining to their regions and give districtwise forecasts of weather and warnings against adverse weather. The Department has also established Agrometeorological Advisory Service Centres at Madras, Pune, Calcutta, New Delhi, Bhopal, Chandigarh, Srinagar, Patna and Bhubaneshwar. From these Centres meteorological advisory bulletins are issued to farmers once or twice a week.

The Department issues warnings against heavy rainfall, strong winds and cyclonic weather for the general public and a number of private and public organisations including aviation, defence services, ships, ports, fishing corps, mountaineering expeditions and agriculturist. Flood Meteorological Offices have been working at ten different centres in order to provide meteorological support to the Flood Forecasting Organisation of the Central Water Commission.

There are separate Directorates of the Department to deal with agricultural meteorology, meteorological training weather analysis over the Indian Ocean and Southern Hemisphere, instruments hydrometeorology, satellite meteorology, aviation services, seismology, radiometeorology and meteorological telecommunications.

Meteorological data are exchanged with many countries through high speed telecommunication channels. As part of India's cooperation with the world Weather Watch Programme of the World Meteorological Organisation, a Regional Meteorological Centre and a Regional Telecommunication Hub functions at New Delhi.

Insat Programme

The Indian National Satellite (INSAT-IB) was successfully launched on 30 August 1983 and the

Main Data Utilisation Centre at Delhi was geared up to make use of its products. Since 3 October 1983, the cloud imagery data transmitted by INSAT-IB are being received, processed and made use of for weather forecasting, particularly for prediction of formation and movement of cyclonic storms and issue of necessary warnings. The Department has established 20 Secondary Data Utilisation Centres (SDUC), and 100 Data Collection Platforms (DCPS). 100 Disaster Warning System (DWS)/Receivers have been installed in the disaster prone coastal areas of north Tamil Nadu and South Andhra Pradesh. There has been improvement in the warning services provided by the Department against tropical cyclones and other natural hazards with the use of INSAT pictures.

Broadcasting

The Research Department of All India Radio was set up in April 1937 with its primary aim to make radio wave propagation studies in Medium and High frequency bands for scientific planning of broadcast services and to investigate problems relating to the maintenance and development of broadcasting in the country. The basic activities of the Department are : (i) to undertake studies, investigations and R and D work for improvement of sound and TV broadcasting network in the country, keeping in view the latest and futuristic advancements in the fields; (ii) to provide technical support to the operations of Akashvani and Doordarshan networks; (iii) to undertake design and development of laboratory model of equipment needed by Akashvani/Doordarshan in large quantities and to draw out their specifications, in order to transfer technical knowhow for commercial production, to monitor the development upto the first production by the commercial organisation and to conduct field tests and evaluation; (iv) to participate and offer expert advice on behalf of AIR and Doordarshan in national committees, ISI, Department of Electronics, etc., in formulating national standards; (v) to study, analyse and where necessary, carry out investigations in problems identified by CCIR, ABU, CBA, etc., so as to ensure that India's interests are safeguarded in international conferences; and (vi) to undertake on a reference from the engineering wings of Akashvani and Doordarshan, testing and evaluation of sound and TV equipment of all kinds which are proposed to be inducted into normal operations.

A "Centre for Digital Techniques in Broadcasting" (CDTB) in the Research and Development Department of All India Radio provided with equipment and allied systems undertakes design and developmental work in digital techniques applied to broadcasting in the country.

Hydraulic and Power Research

The Central Water and Power Research Station, Pune (established in 1916) is the premier hydraulic research institution in India and recognised as the regional laboratory of the United Nations Economic and Social Commission for Asia and Pacific (ESCAP) in the area of waterways and waterborne transport.

The Central Soil and Materials Research Station, New Delhi, (Established in 1954) is conducting basic and applied research in geo-mechanics and construction materials, soil mechanics and foundation engineering and concrete technology and chemistry and sediment.

The National Institute of Hydrology, Roorkee, set up in 1978 as an autonomous society is a premier national research organisation entrusted with carrying out systematic scientific activities in basic, theoretical and applied hydrology.

The Central Board of Irrigation and Power, New Delhi works for the promotion and coordination of research work in the field of irrigation and power engineering.

Railways

The Research, Designs and Standards Organisation (RDSO), under the Ministry of Railways was created in 1957 by merging the Central Standards Office (CSO) and the Railways Testing and Research Centre (RTRC), Lucknow. The RDSO has now grown up into a fully equipped research organisation of the Indian railways having experts from all the disciplines of the railway.

Fibre Technology

The Cooperative Research Association in the textile sector constitute an important segment of activities relating to research and development of fibre technology. These are Ahmadabad Textile Industries Research Association, Ahmadabad (established in 1949), the Bombay Textile Research Association, Bombay (established in 1954), the South India Textile Research Association, Coimbatore (established in 1951), Silk and Silk Mill Research Association, Bombay (established in 1950), the Indian Jute Industries Research Association, Calcutta registered in 1966), the Wool Research Association, Bombay (established in 1963), North Indian Textile Research Association, Ghaziabad (established in 1974) and Man-made Textile Research Association, Surat (recognised as an independent body in 1980-81).

Elecommunications

The Telecommunication Research Centre (TRC) is the research and development organisation of the Department of Telecommunications. Set up in 1956, TRC has progressively grown into a large organisation dedicated to the work of telecommunications development. TRC, amongst other activities, is assessing the future needs of telecommunication network in the introduction of appropriate new technology and also undertakes development of designs for indigenous fabrication of new system.

TABLE 1.5
Achievements at Different Levels of Education

	1950-51	1960-61	1968-69	1978-79	1979-80	1982-83 ¹	1983-84 ¹	1984-85 ¹	1985-86
1	2	3	4	5	6	7	8	9	10
1. Number of Pupils in Classes I-V (lakh)	1991.5	349.9	543.7	689.6	699.8	770.4	811.0	839.0	864.6
2. Percentage thereof of total population in age group 6-11	42.6	62.4	78.1	81.6	82.7	87.2	91.8	94.1	93.9
3. Number of pupils in classes VI-VIII (lakh)	31.2	67.0	125.4	181.8	186.1	222.1	245.9	257.0	281.2
4. Percentage thereof to total population in age group 11-14	12.7	22.5	33.5	38.0	39.4	43.9	48.4 ²	49.8	52.1
5. Number of pupils in classes IX-XI/XII (lakh)	12.2	28.9	61.5	84.1	114.2	118.2	148.7	160.7	151.1
6. Percentage thereof of total population in age group 14-17	5.3	1.6	18.3	18.8	NA	24.6	32.5 ²	32.4	NA

1	2	3	4	5	6	7	8	9	10
7. Number of pupils at the university stage arts, science and commerce (lakh)	3.6	8.9	17.0	38.2	31.5	47.5	35.5	28.9	30.4
8. Percentage thereof to total population in age group 17-23	0.8	1.8	3.3	4.9	NA	NA	NA	NA	NA
9. Percentage of students reading science at university stage	37.8	28.9	23.0	18.0	24.0	23.4	22.7	21.9	21.5
10. Number of primary/ junior basic schools	2,09,671	3,30,399	4,00,621	4,72,519	4,82,476	5,03,741	5,09,143	4,19,701	5,28,079
11. Number of middle senior basic schools	13,590	49,663	84,246	1,12,801	1,15,117	1,23,423	1,26,345	1,29,879	1,34,074
12. Number of high/ higher secondary schools	7,288	17,257	33,487	46,874	48,905	52,279	55,235	58,834	61,314
13. Number of teachers training schools	782	1,138	231	118	138	908	914	923	966
14. Number of teachers training colleges	53	478	1,377	1,286	1,283	511	517	367	450
15. Number of arts, science (including research) and commerce colleges	542	1,122	2,141	8,698	3,611	8,011	7,834 ³	8,114	9,102
16. Number of Universities	27	45	92	128	125 ⁴	137 ⁴	137 ⁴	150	150
17. Number of teachers in primary schools	5,37,918	7,41,515	10,05,282	13,28,700	12,96,639	13,89,356	13,91,912	14,58,140	15,09,910
18. Percentage of trained teachers in primary schools	58.8	64.1	76.9	86.8	87.1	86.9	88.2	88.7	89.70
19. Number of teachers in middle schools	85,496	3,45,228	5,95,733	8,35,608	8,25,146	8,56,389	8,78,562	9,05,207	9,67,988
20. Percentage of trained teachers in middle schools	53.3	66.5	81.0	88.7	87.4	89.5	90.6	90.6	90.30
21. Number of teachers in high/higher secondary schools	1,26,504	2,96,305	5,81,618	8,69,842	8,18,507	9,23,115	10,32,219	10,75,487	11,58,745
22. Number of teachers in university, art and science colleges	18,648	41,759	91,069	1,32,282	2,49,399	NA	NA	NA	NA

1. Figures are provisional includes below degree level institution also.

2. Percentage is based on projected population for 1933.

3. Includes Arts, Science and Commerce colleges only.

4. Includes deemed to be university and institutions of national importance.

5. NA stands for Not Available. Digital Preservation Foundation, Chandigarh. Funding by IKS-MoE-2025-Grant

Development of Higher Education in India

Since the establishment of formal universities at Calcutta, Bombay and Madras in the year 1857, the western system of higher education has been progressing every year. There have been many Committees and Commissions in colonial India. Their recommendations were not given due importance by the colonial rulers. After independence, there have been attempts to review the progress of higher education and to suggest measures to be taken for its speedier progress. Some of the recommendations of a few important Commissions and Committees are given below.

RADHAKRISHNAN COMMISSION REPORT (1948-49)

The University Education Commission (1948-49) under the Chairmanship of Prof. (Dr.) S. Radhakrishnan made following recommendations:

1. Aims of university education should be development of wisdom and knowledge, democratic social order, love for higher values of life and training for leadership.
2. The strength of affiliated colleges should be less than 1500.
3. The strength of Universities should be less than 3000.
4. Number of working days per academic session to be 180.
5. Adequate provision should be made for tutorial classes, library work and written examinations.
6. Practice of prescribing a few textbooks should be discontinued.
7. Duration of post graduate study for pass graduates should be of two years and for honours graduates should be of one year.
8. Admission to the universities should be controlled at all India level.
9. Examination reform to be carried out in following manner:

- (a) One-third weightage should be given to class work.
 - (b) The minimum experience in teaching for an examiner should be at least five years.
 - (c) The candidates securing 70 per cent and more should be declared first class, from 55 per cent third class.
10. More stress should be given on agricultural education.
 11. More facilities should be given for women education.
 12. More facilities should be provided for student welfare such as free medical examination at the time of admission, and provision of hospitals and dispensaries, etc.
 13. Provision should be made for compulsory physical education for at least two years.
 14. More encouragement should be given for participation in N.C.C. and social service activities.

KOTHARI COMMISSION REPORT (1964-66)

The Report of the Education Commission (1964-66) under the Chairmanship of Dr. D.S. Kothari made following recommendations:

Objectives

The Commission viewed the objectives of the universities in the following manner :

“Their principal object is to deepen man’s understanding of the universe and of himself- in body, mind and spirit, to disseminate this understanding throughout society and to apply it in the service of mankind . They are the dwelling places of ideas and idealism, and expect high standards of conduct and integrity from all their members.”

(1) Functions of Universities

- to seek and cultivate new knowledge, to engage vigorously and fearlessly in the pursuit of truth, and to interpret old knowledge and beliefs in the light of new needs and discoveries;
- to provide the right kind of leadership in all walks of life, to identify gifted youth and help them develop their potential to the full by cultivating physical fitness, developing the power of mind and cultivating right interests, attitudes and moral and intellectual values;
- to provide society with competent men and women trained in agriculture, arts, medicine, science and technology and various other professions, who will also be cultivated individuals, embossed with a sense of social purpose;
- to strive to promote equality and social justice and to reduce social and cultural differences through diffusion of education; and
- to foster in teachers and students, and through them in society generally, the attitudes and values needed for developing the ‘good life’ in individuals and society.”

(2) Stress on Research

There should be more stress on research in the following manner:

- (a) Involvement of major universities in first class post graduate research work comparable to any other good university in other parts of the world.

- (b) Establishment of Centres of Advanced Study.
- (c) Institution of fellowships for working and retiring teachers.
- (d) Setting up of National Academy of education and Education Research Council.
- (e) Increase in expenditure on research.
- (f) Facilities to be given at Centres of Advanced Study for conducting research and seminars to promising scholars and scientists from other universities.
- (g) Fostering of inter-university linkages.

(3) Examination Reform

The examination reform may be carried out as follows:

- (a) Granting of autonomous status to outstanding colleges.
- (b) Establishment of examination reform unit at various stages.
- (c) Introduction of a system of internal and continuous evaluation in place of external evaluation in case of teaching universities.
- (d) Introduction of a system of internal assessment to supplement external assessment in case of universities with affiliated colleges.
- (e) Abolition of payment of remuneration to examiners.
- (f) Restricting number of answer scripts to be examined by an examiner in a year to 500.
- (g) Encouragements for seminars, discussions and work-shops on evaluation techniques.

(4) Improvement in Quality of Programmes

Following improvements in functioning of institutions were suggested so as to provide programmes of better standard;

- (a) Granting of autonomous status to outstanding colleges.
- (b) Improving facilities of universities:
- (c) Improving facilities of affiliated colleges:
- (d) Reduction in number of formal classroom and laboratory hours and utilization of the time saved in development of independent study, assigned reading, writing of essays, solving of problems and small research projects under the guidance of instructors:
- (e) Restricting the absence of teachers during term time to seven days.
- (f) Improving quality of libraries.
- (g) Experimenting on handling of large number of students in a class room.
- (h) Experimenting on utilization of selected post-graduate students of second year in teaching.
- (i) Duration of class hour to be not less than 60 minutes out of which 10 minutes are to be devoted to question and answer.
- (j) Study of teaching methods at higher education stage by the schools of education.
- (k) New appointment to be made during vacation time.

the development process. These guidelines must emphasise that the "women's dimension" must form an integral part of all Doordarshan programmes and not be merely confined to Women's Programmes, nor to isolated attempts to discuss women's issues.

3. Portrayal of men on television must include them as sensitive, caring individuals acting as full partners in household and child care responsibilities, also, as fully responsible in shouldering contraceptive responsibilities.
4. A system of monitoring of the implementation of these guidelines must be simultaneously developed.
5. The number of commercial formula films screened must be drastically reduced, the cheap song-and-dance sequences totally eliminated and the content of such programmes carefully scrutinized in terms of their portrayal of women.
6. Women must not be portrayed in stereotyped images that emphasise passive, submissive qualities and encourage them to play a subordinate secondary role in the family and society. Both men and women should be portrayed in ways that encourage mutual respect and a spirit of give and take between the sexes.
7. Foreign film serials that are denigrative of women should not be imported. Instead foreign exchange resources should be spent on importing worthwhile educative programmes, particularly those that show the roles, lives and struggles of women in neighbouring and other Third World countries so that a greater understanding and a shared perspective on problems is built.
8. In order to promote a positive ideology that is sensitive of women's needs, and permeates the total programming and also to have a co-ordinated, consistent policy in would be necessary for all Doordarshan policy makers, programming and production staff to have regular orientation courses that sensitize them to the social issues with particular reference to women's issues and their implications to society.
9. Programme Advisory, Monitoring and Purchase/Selection Committees should be constituted for all major programme slots, including films and imported programmes. Seventy-five per cent of the members of such committees should be non-official's and a minimum of forty per cent of the members should be women from a panel of names suggested by women's organizations and other public bodies involved in social issues.
10. All advertisements shown on television must be scrutinized carefully by a special committee to ensure that they do not portray women in derogatory stereotyped ways.
11. The women's programme should be telecast twice a week for a half hour period each time. The timings of transmission should be in the late evening rather than at 6.30 p.m. as is the current practice.
12. In addition, a regular educational programme should be introduced in the afternoons aiming specifically at school dropouts, and women who have had little or no formal education.
13. The children's programme should 'project the values of equality between girls and boys and seek to break sex stereotyping. The programmes should be imaginative and educational, using a variety of methods, such as theater, puppetry, etc., as well as interesting locations such as

laboratory, an observatory etc.

14. There should be a weekly programme of viewer's views in which the audience as also critics and commentators from newspapers, women's organizations etc. are called to analyses and evaluate the week's programme. The evaluation must have a specific focus on the way in which women are portrayed.
15. Greater opportunities must be given to young film makers who have established a reputation for sensitive portrayal of women-related and other social issues. Doordarshan must also develop a system by which knowledgeable persons, activists and researchers can assist programme designers and producers with information and ideas for programmes on women's issues.
16. Every kendra should develop a panel of names of individual women's organizations and institutions that can be called upon to help.
17. It is necessary to ensure that a large number of rural women gain access to TV. Therefore, in the placement of community TV sets preference should be given to the meeting place of Mandals: Mahila Mandals should also be involved in the community viewing arrangement".

Mass media like TV, radio and films, apart from the family and school, have a role to play as catalysts of social change. The first step towards achieving the goal would be to clear the way of all obstacles. These obstacles are the prejudices, traditions and stereotypes regarding the role of women in society that have entrenched deeply in the minds of the people. This first step, undoubtedly, is a difficult one but it has to be taken.

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Television Programmes for Women

The *raison d'être* for television's introduction into India and equally for its present phenomenal expansion has been on the strength of its potential as a tool for social change-as a vehicle that can leapfrog our formidable barriers of physical underdevelopment to reach regions with knowledge that can transform lives and bring about the socio-economic development of the masses.

The Indian Constitution has pledged the country to the creation of a new social order based on equality, freedom, justice and the dignity of the individual. To that end it is dedicated to the elimination of poverty, ignorance ill health and gender inequality. The Constitution further empowers the state to make special provisions for women and children. The colossal investment in an expensive electronic medium such as television has been officially justified as a part of the effort to redeem these pledges which have, at best, remained pious hopes for so many.

The argument as to whether television can subserve this purpose has now conclusively passed into the realm of rhetoric. The reality of today is that a vast investment is being made in this medium in the name of the poor and the vulnerable segments of Indian society. The need of the hour is to ensure that the medium begins to truly subserve that cause.

Many distinguished speakers have already highlighted the anomaly between television's stated objectives and the actuality. The very fact that special efforts such as this seminar have to be made to draw attention to television's utilization for the development of women and children is itself a reflection of that anomaly. For, given the context that women and children make two thirds of the total population a medium that has been encouraged for the laudable aims mentioned earlier should be *automatically* catering predominantly to the requirements of those segments who form the majority and are widely recognized as the most vulnerable sections of the Indian society. It is only through serving the interests of women and children that TV would be able to fulfil its role as a development tool. Therefore, women and children cannot be thought of as special segments to which the medium must cater through occasional or even regular programmes. Rather, its overall philosophy and approach have to be determined in a way that accords these two categories the overriding importance that their numbers and needs deserve. Their betterment is central to the social transformation TV seeks.

Yet, even the most casual viewer knows that at the present this is far from the case. In this presentation, I will not take up the issue of children which has been already addressed at a special session, nor indeed do I intend to talk only about television programmes for women as has been indicated in the programme schedule. Special programmes for women are just one essential but small part of the total effort for attitudinal change about roles, rights, responsibilities and opportunities for both sexes that the medium must address itself to in order to project the constitutional goals of equality, justice and individual dignity, and indeed for it to be a viable instrument of development.

Nearly ten years ago, the Committee on the Status of Women observed in its eye-opening report on the condition of Indian women :

“The content of communication at any given time reflects the pattern of values of the society. The way subjects dealing with women are treated indicate to a great extent the prevailing attitude of that society towards its women. In any case women who are half the population are often half the audience. The success or failure of development plans in education, family planning, community development, health and nutrition depends upon the involvement and participation of women. (This) investigation shows that compared to men and women are underprivileged in many ways and suffer from serious disabilities. Since education is a costly and long term process it is essential to harness the mass media. However, incidental studies on the impact of the mass media indicate that women’s exposure to the mass media is often marginal and unsatisfactory. It appears that the mass media has not been as effective instrument to inform and prepare women to play their new roles in society. The committee’s investigations reveal a general lack of awareness about the rights, problems, opportunities and responsibilities among both men and women. Since government controls a significant section of the mass media it should set the pace”.

In the decade since that review, a decade internationally acclaimed as the Women’s Decade within which, coincidentally, television came of age in this country, it might well have been hoped that this powerful communication tool, totally in the government’s control, would have a prime responsibility to redress the women’s situation ; the need for redressal of women’s condition had been felt at the nation’s very birth but has remained so unfulfilled more than three decades later. Shaping the strategy for the nation’s Sixth Five Year Plan at a time that was midpoint in the Women’s decade, the policy makers had noted : “Despite development measures and the constitutional legal guarantees women have lagged behind men in all sectors.”

Yesterday, Dr Joshi analysed the reality of development and raised fundamental questions about development processes and their intended and unintended effects on the lives of the people for whose benefit these measures are supposed to be initiated. But perhaps the most devastating evidence of the distortions of development, it is now recognised, comes from the female experience. It is evident that women have had unequal access to the fruits of development and have often borne the brunt of its unintended backlash. An examination of the female “lag” throws up searing statistics which show that for the Indian female the discrimination and disadvantages of her condition have added up to an unequal struggle for survival itself. India is one of the few countries in the world where the female species has had a declining sex ratio over the century-only marginally reversed in the last decade. This has been the result of higher female mortality at practically all ages including from birth to the age of 9, but with an unconscionably high rate of maternal mortality, pointing to a pervasive neglect of the female child and

female needs.

There is extensive research documenting that the differentials in survival are paralleled by differentials in all important aspects of life itself—poorer nutrition, lesser health care despite higher levels of morbidity, lower education and skill formation. The problem of universal education has been long identified as one mainly of women, scheduled castes and tribes : notwithstanding progress in female education, literacy has reached only 1 in 4 women as against 1 in 2 men and in absolute numbers there are 100 million more illiterate women and girls today than there were in the fifties. The outlook for the next generation of women remains bleak with two thirds of the children outside schools today being girls and the female drop-out rate at all educational levels consistently remaining much higher. The displacement of women from traditional occupations without adequate alternatives available has skewed work opportunities for the vast majority leading to greater female exploitation of different types. The planning process has finally come to recognise that the enormous economic contribution of women both within the family and to society has remained largely submerged from view and therefore denied the essential support services that could assist women to be more productive in fulfilling their multiple roles. But the government owned television far from “setting the pace” has notably failed to see and reflect this reality, much less carry out a concerted campaign to redress deep-rooted wrongs being compounded by new insensitivities.

This is grievous enough that a medium ostensibly invested in to help remedy the imbalances and inequalities of society has been largely oblivious to the grim reality of the lives of the vast majority of women. Even more heartbreaking than the low priority television seems to have attached to the subject of women’s status and betterment, is the complete impunity with which it has allowed itself to be used to the detriment of women. A number of critiques made by citizens wishing to galvanise this powerful media to a meaningful role have pointed out this aspect. A seminar on Doordarshan’s role in Women’s Equality and Development conducted last year by the Centre for Women’s Development Studies and the Committee for the Portrayal of Women in the Media made two major points : (1) a very wide distance existed between the national policy objectives vis-a-vis women’s equality and development and Doordarshan’s present role and programming and (2) the general tenor of Doordarshan’s programme counter to its stray efforts to be purposive on women’s behalf.

As Prof. Yashpal pointed out yesterday the totality of effect is the question. An occasional serious programme put out to raise debate or stir the conscience may be convenient to quote as an illustration of efforts by I & B administrators and Doordarshan programmers but is lost in the flood of puerile negative imagery constantly from Doordarshan as a consequence of its complete domination by the commercial formula film to which now has been added the influence of the advertisement world. The time allotted for socially relevant discussions or programmes is not only inadequate in itself but the message cannot even be heard in the midst of so much populist material pandering to the lowest common denominator. In recent weeks, Doordarshan has undoubtedly launched a socially purposive family drama that is in the right direction, though yet somewhat amateurishly handled. Even while this serial takes up the right issues, its handling highlights the inadequate understanding of the problems on the part of those posing creative solutions.

In any case films and film-based material continue to constitute substantial chunks of Doordarshan’s output and as the report on Doordarshan’s Role in Women’s Equality and Development highlighted, “These programme are loaded with derogatory images of women and are usually explicitly or implicitly

sexist. They play a significant role in reinforcing negative stereotypes''. What are these stereotypes? Basically drawn from a middle class vision of women that sees her and glorifies her *solely* in the role of wife, mother and homemaker. Not only is this a travesty of the vest reality, but equally a gross injustice that denies-and therefore serves to kill rather than help blossom-the richness of a women's total dimension and her critical larger role within the community and the country. Thus, the medium instead of widening the women's horizon and taking her further up the road of partnership, is now carrying into remote areas a distorted perspective that pushes women into a narrow niche and makes it more difficult, indeed dangerous, for those not conforming to this unidimensional type of personality.

The film and film-based programmes promote a culture antelhetical to women. Let me quote again from the earlier mentioned report :

''Both the commercial films and the film song programmes contain long sequences with semi clad women dancing for me either in cabaret scenes or supposedly rural settings. There is also a trend of growing violence in commercial cinema. The observed rising incidence of violence towards women in real life cannot be delinked from the depiction of such sequences in many of the feature films which are so uncritically projected on Doordarshan....In fact, the commercial cinema today is the prime medium through which negative and derogatory images of women in our society are both created and reinforced. The films consume over 20 per cent of total viewing time leaving little time for more significant programmes that can contribute to social and cultural development-large sums of scarce public resources are used to subsidize the already overfinanced commercial film industry''.

I might also draw your attention to a study recently done abroad which has established that films showing violence to women not only desensitised men but also the women watching such films. Exposure to such films coloured the viewers' assessment of women as *deserving* and *not* being *victimised* by such violence.

But Doordarshan remains immune to the weight of such findings. In the last year since that seminar brought into focus the anguish regarding the lewdness, violence and vulgarity of the commercial cinerma shown of TV and its corroding impact on public mortality, for which women particularly pay a price, the content of films material has stepped up, not gone down. While it may be argued that there has been an attempt to eliminate scene of out-right violence and to more strictly scrutinize the content of such programmes in terms of their portrayal of women, this does not really serve the purpose. In any case, the nature of the commercial formula film is such that while the most obvious crass displays of vulgarity and violence may be weeded out, much that is offending remains within its very structure. Besides, the violence to women has several forms of which physical violence towards a women is only one despicable extreme and the physical display of the female form for titillation the other. Equally grave a problem is that of the pshchological violence to womanhood by the more insidious subversion of women's self-respect through a steady and subtle glorification of her consistent subordination, Self-effacement and sacrifice which has been termed the ''Sita-Savitri syndrome''. The other side of this coin is the male image similiarly unsuitably fed on a diet of aggression and self-centredness as a model of the macho man-and to be macho in the traditional society is a plus point ! While self-effacement and sacrifice are values that have intrinsic merit and rightfully occupy a respected place in the Indian traditional value system, it needs to be recognized that these virtues are expected only from one half of society and not from the other half that has to a great measure contributed to the delibitated and

decimated plight of Indian womanhood in general. A government-owned medium dedicated to the rectification of the situation cannot place itself in a position that helps to perpetuate such a situation. But it does.

The Indian commercial formula film is not the only damning part of Doordarshan's contrary wave to women's interests ; its selection of foreign film serials has imported the range of Westernized patronizing attitudes and biases against women into our lives. Scarce foreign exchange and peak transmission time is now devoted to showing people that women always scatterbrained like Dear Lucy. Such programming cannot be conducive to the development of wholesome attitudes.

So much for an analysis of what exists. What is it that we need to do to make Doordarshan deliver on its promise as a change agent ? What are the necessary steps ? It is not enough to suggest a set of programme ideas. Much more fundamental exercises are needed to halt the dangerous drift which makes Doordarshan a lethal weapon against women rather than a positive instrument for their benefit. Programme ideas taken up on an *ad hoc* basis will only lose their power in the welter of conflicting messages presently beamed and end up serving little more than the purpose of politicians and administrators wanting to claim achievements that don't actually add up to anything in the field.

There is, therefore, need to press the government to announce that it considers the improvement of women's condition, status and image a primary objective of Doordarshan. Towards this end, it must formulate clearcut guidelines regarding the positive portrayal of women on television which take note of women in all facets of their lives, but particularly as workers and significant contributors to family survival and the national economy so that respect for the women's individual worth, understanding of her special problems and the need to promote the integration of women in terms of equality in all sectors of national life and the development process is built up. Further, there is need for these guidelines to emphasise that the women's dimension forms an integral part of all Doordarshan programmes as far as possible and does not remain confined to isolated attempts to focus on women's issues or within the women's programme. (The women's programmes, however, do need to be retained, given far more time, importance and wider base, so that women receive special attention to bridge the gaps till they are themselves ready to receive all programmes of diverse interests, as men are). Further these guidelines must enunciate the need for a portrayal of men that highlights and applauds them as caring, sensitive and self-sacrificing individuals, particularly showing them as co-operating in and taking on household, child care and other family responsibilities. The implementation of these guidelines cannot be left to good intentions. Alongside, a careful evaluation and monitoring system needs to be set up. Doordarshan should be made accountable and its performance ought to be open to public scrutiny.

Further, in order to promote a positive ideology that is sensitive and constructive about women's needs and ensure that it permeates all programming and that there is a co-ordinated, consistent policy on the subject, there is need for all Doordarshan policy makers, programmers and producers to have an orientation that sensitizes them to the dimensions of the women's question within a framework of general social issues. However, to further ensure that the Women's interest is protected, there is need to constitute Programme Advisory, Monitoring and Purchase Committee for all major programme slots, including films and imported programmes. These committees should be predominantly non-official and at least half the members should be women ; further, at least half the members should be selected from a panel of names compiled from those women's organizations and other public bodies involved in social issues. Similarly, a special committee should carefully scrutinize all advertisements to ensure that they

do not portray women in derogatory and stereotyped ways. The purchase of foreign programmes should be limited to those that educate or promote a shared understanding of problems, particularly with reference to the roles, lives and struggles of women in other Third World countries. The reality of the ordinary Indian women's life needs to be explored through more field-based documentaries that rectify the myopia of the media's middle class vision of women, but which also, through a creative search for solutions, offer an energizing, mobilizing experience that can motivate viewers to seek improvements. There is a general need to make the programmes more participatory and to draw in women and men, who are knowledgeable about women's issues, to develop the programmes. Last in my listing here but actually first amongst priorities, is the question of organizing access for the rural and urban poor women who form the most disadvantaged section of Indian society to have access to television programme through schemes that promote community viewing taking into consideration the special needs and appropriate timing for the women of the community.

In sum, what is needed is not simply compartmentalized thinking on a few better programmes for women but a sea change in philosophy, organization and methodology. How far television succeeds in serving the interests of women is in fact a touchstone of how far television is made a genuine development tool.

The Social Life

For children from the age of two on, talk becomes more and more central to the increasingly diverse events and transactions of life. In this chapter I will examine some of the ways in which talk serves the important social goals of initiating and constructing such focused engagements as teaching, trading, and playing; its role in shaping and organizing children's group activities; and its contributions to friendships. In some transactions talk appears to be primarily instrumental in achieving some immediate end, such as persuading another to return a purloined object, getting help in completing a puzzle, or gaining admittance to an ongoing group activity. At other, less urgent, times talk may be an end in itself, joined just for fun or for its intrinsic interest. An observer might postulate that the "conversationalists" have an urge to affiliate, but the children may be simply exploring the discovery that engaging another person in talk is in some ways more pleasurable and exciting than talking without a partner. But whatever the immediate motive or effect, social talk becomes a part of each child's developing style of interpersonal behavior. Recurring patterns of verbal interaction, along with nonverbal communication, come to constitute the somewhat more lasting complexes of attitudes, expectations, and interdependencies between persons that we think of as relationships. Before we examine the important transactions in which talk plays a central role, I will describe some of the characteristics of "Just conversing."

Just Conversing

What is a conversation? It proves easier to say what a conversation is not than to define it by its attributes. We do not consider business transactions or any interchange having planned procedures or previously stated goals, such as solving a problem, teaching a skill, or disciplining another person, as conversational. The term is usually reserved for informal, more or less spontaneous interchanges in which a few or just two persons alternately introduce and jointly pursue topics in a leisurely manner without an explicitly prearranged agenda. A conversation can be embedded in some other type of interaction or can constitute a whole encounter. When do children begin to converse in this sense? Certainly conversations occur during the preschool period, both with adults and with other children. Conversations thrive in familiar settings and with familiar persons, especially between pairs, since

handling the necessarily responsive contributions of conversation if difficult with more than one partner at a time.

Young children, at least when they are well and at ease, are usually busily pursuing some line of action or are in momentary transition from one project to another. Much of a child's talk arises from and accompanies his own activities, and if two or more children are in physical proximity, the talk functions rather like a radio device that permits each to monitor where the action is and to "home in" on it if it seems interesting. A three-year-old typically either invites another to join or attend to his own activity, "Look what I'm making," or displays his involvement both verbally and nonverbally so that a monitoring partner is drawn in and action can become coordinated, at least for a brief period before some distraction or new project begins. Making one's action, intelligible to another is a problem of some magnitude to very young children; if one is to join the other's action, it is critical to determine what the other is doing. Understanding what is going on proves to be essential for a slightly older child who wants to enter into the ongoing activities of a group of mutually involved children, as we shall see in a subsequent section of this chapter. But even in the pairs of young friends we studied, the question, "What you do in?" was often addressed to one child by another and rarely failed to bring forth an action-defining formulation, such as "Making coffee." A little less frequently both children together would construct a joint line of action and pursue it together, beginning, perhaps, with a "let's" suggestion, or by jumping directly into a coordinated activity.

In her several studies of the way action lines converge among pairs of children, Grace Wales Shugar found that three-year-olds joined a partner's action line less often than they drew a partner into their own line of action; four-year-olds joined a partner's line more frequently and were also more likely than the younger children to jointly initiate coordinated action. (In contrast, in the children's interactions with an adult, the adult tended to join the child's action line.) In this flow of converging, dissolving, and again converging action, brief conversations begin to appear between familiar and friendly children. Although they may emerge out of a shared action line, these episodes of "topical discourse" become, as Shugar says, dislodged from the immediate action. They are instances of just conversing. The topics may be selected from memories, may be plans for the near future, or may express opinions or emotions. They display a reciprocity of attention and concern, regardless of the topic, although they are not always as harmonious as the following conversation between Judy (32 months) and Tom (33 months), who at this point in their play session were not sharing any line of action except the verbal focus created in talk. In this example Tom abandoned his action line and proposed a topic to join the topical focus that Judy introduced:

Tom	Judy
(Sits on the wooden car,) I'm the driver (explaining his own action line).	(Stands beside the car.)
	I'm tired (introducing her self-reporting topic).
Why? Would you like a square dice? (referring to a plastic block).	
	No, thank you. I'm not sick.
They make you better. Do you want one? They make you better. (Holds it out to her.)	
	No, I don't want any.

All right.

I'm not sick anymore.

Are you sick ?

No.

I'm not either. I'm not sick either.

(Judy abandons the topic and tells Tom to turn off the car.)

In a rather more mature-sounding conversation, a five-year-old boy and girl alternately contributed opinions concerning their time in the playroom. The topic was embedded in a pretend play sequence (both children were sitting on the car) but was quite independent of it, and both lowered their voices during this exchange of views :

Boy

Girl

(Makes driving noises.)

I think we're gonna be picked up soon, don't you ?

Hey, I think they're gonna come over now. *(Turns head to listen.)* I hear some- one walking.
(He is hearing steps in the hall.)

(Gets off car, goes to door, looks out, then back to partner.) I think I hear them, don't you ?

I don't think it's for us *(as sound of steps passes)*.

We just came in here, right ?

Yeah.

I think it's juice and cookies time, don't you ? *(She may be referring to that time at nursery school.)*

No, it wouldn't be.

(Play resumes.)

Neither of the above conversations exhibited a playful orientation, but many conversational episodes do; playful teasing, contributions that are meant and are taken to be funny, and topics from the realm of fantasy were common in most of the pairs we observed. Indeed, Anca Nemoianu has used the term "conversation-play" to characterize the talk during social interaction of three children she observed over a six-months period, maintaining that it is often difficult to distinguish the boundaries of and transitions between playful and nonplayful attitudes in the flow of activity.³ In many cases this is true, although role play, does employ distinctive verbal markers to identify portrayed characters. One variety of play interchange, however, is distinctly different from other kinds of talk and must be mentioned here, since it has been suggested as one of the precursors of conversational exchange among peers.⁴ That is socially constructed sound play, so called because the content comprises sounds or nonsense words. In such episodes turns are alternated promptly and rhythmically, but each child successively repeats and/or slightly modifies the form, rather than the content, of the previous turn. In similarly rhythmic, but referentially interpretable verbal play episodes, it is still the form more than the content, or meaning,

that makes the episode cohesive, with each child building on the other's turn by repetition and some limited modification or expansion of the prior turns. In the same session in which Judy and Tom produced the conversational episode cited earlier, they also produced the following rhythmic and playful episode in which repetition and successive modification were the organizing principles. Tom began by picking up a word from Judy's prior utterance (they had been talking about where the parents of Judy's baby doll were).

<i>Judy</i>	<i>Tom</i>
Well, someday you can see the dada, but not for a long time.	
	I have a dada, too.
I have a dada, too.	
	I have a <i>real</i> dada.
I have a special dada.	
	I have a real dada.
I do too.	
	I do too.
I have a special dada, too.	
	I do too.
I have a special dada doo.	
Da dada. (<i>Starts to chant.</i>)	

Among preschool children such markedly playful episodes coexist with more "serious" interchanges and with those that consist of dramatic or fantasy play.⁵ Although episodes of sound play become less frequent, these ritualized play patterns do continue to occur and seem to have a communicative function and special form of their own. As such, they are not a likely preparation for just conversing. Further, sound play and ritualized verbal play are rarely observed in interactions between caregiver and child when the child in beginning has conversational life, although just conversing on a topic, usually one introduced by the child himself, often occurs in the interstices of more task-oriented talk with the caregiver. Just conversing, then, is one social activity that increases in frequency and in diversity of topic over the preschool years to become an important type of sharing among children and a major constituent of the interactions of most close friends, both displaying and reinforcing solidarity and intimacy.

Breaking and Entering

A child brought into a new situation, such as a newcomer to an established nursery school class, tends to speak very little at first; he behaves unobtrusively and spends his time watching the habitues. His first overtures are likely to be tentative. (Even a pair of children who do not know each other usually begin their interaction cautiously, with "getting acquainted" moves such as asking for the other's name.) Saying the right thing in the right way is one important step in initiating the interactions that will lead to acceptance and in avoiding ones that will lead to ever-worsening relations. When several children are together, in a day care center, at a birthday party, play group, or school, groupings

inevitably appear. Some clusters may form voluntarily during a free period : some are engineered by an adult for routine activities, such as making valentines, working on an assignment, or having a snack. In voluntarily formed groups, particularly, and in those where adult supervision or direction is minimal, the basis of the temporary cohesion is likely to be a shared activity to which the members are committed. Members form a "we" and are protective of their psychological and physical interactive space and possessive of the objects involved in their mutually defined activity. Entering such a group (and such a group can appear powerfully attractive to a solitary child or one who is in transition from one involvement to another) poses a serious problem, not only to the socially inept or relatively unpopular child, but even to the more socially skilled and popular child. Members of a group will often react quite fiercely to the outsider's first bid for entry. In fact, in nursery school groups of both three- and four-year-old children who had been together in the classes for several months and thus were acquainted with each other, half of all first entry bids were rejected by the involved group. Typical rejection moves were "Go away" and "You can't" play," followed by such reinforced rejection as "We don't like you today" and "You're not our friend." Knowing that such a reaction is likely, the outsider, not surprisingly, generally approaches the group with some trepidation, watching and hesitating before first attempting to join. He also realizes that he must be ready to persist in his attempts when he is either ignored or rebuffed.

A number of factors influence the probability of gaining access to a group. One is the perennial sex problem. A girl's chances of joining a group of boys are fairly poor. The group's rationale for exclusion is often quite straightforward. For example, a girl ran up to two boys on a swing and asked, "Can I get on?" Each boy forcibly replied, "No," and one boy went on to tell her, "We don't want you on here. We only want boys on here." Another factor is the stability and solidarity of the group itself. If it is composed of close friends, who are probably engaged in established and jointly evolved play activities, the outsider has little chance of being accepted. The intimate group has its own language of friendship and familiar interaction patterns. Catherine Emihovich observed three very close four-year-olds friends in a nursery school class of fourteen children for a period of four months. At the beginning of the semester the friends were the only children who called one another by name, and they regularly played a domestic scenario together, each taking the same pretend roles on each occasion. They resisted entry bids from other children, and after a few sessions the other children in the class ceased trying to join their pretend play activities, although one girl did become a friend of the girl in the established group and was subsequently admitted to play a role in the "family," which was expanded to accommodate her.

The popularity of the outsider and the popularity of the children in the temporary activity groupings in a classroom or on the playground also influence the length of time a child watches, or "hovers," on the periphery of a group before attempting to gain admittance ; the number of entry bids he may have to make before finally being admitted ; and the likelihood that he will eventually succeed. Popularity is strongly tied to the communicative and interpretative skills required for successful entry into and functioning in a group. In the later preschool and early elementary school period children distinguish between acquaintances and strangers, and they also categorize other children as liked, or popular, or as unpopular, and thus generally less desirable as playmates. Popular children require less time and fewer entry bids to gain access to an activity group, especially when that group is composed of popular children. It is a bit more difficult for them to enter groups composed of unpopular children. Unpopular children, as might be expected, have a very hard time joining a group of popular children but manage a little better in joining other unpopular children (although still not as efficiently and successfully

as popular children entering a more favored group). One secret of the popular children's success lies in their ability, displayed both verbally and nonverbally, to understand the structuring of the group's activities, to recognize what is going on, and to produce well-timed entry bids that accommodate to the group's involvement, thus minimizing any disturbance of the ongoing action. They have learned, in effect, the following guidelines. The Don't's : don't ask questions for information (if you can't tell what's going on, you shouldn't be bothering those who do) ; don't mention yourself or state your feelings about the group or its activity (they're not interested at the moment) ; don't disagree or criticize the proceedings (you have no right to do so, since you're an outsider). The Do's : be sure you understand the group's frame of reference, or focus (are they playing house ?); understand the participation structure of the activity; slip into the ongoing activity by making some relevant comment or begin to act in concert with the others as if you actually were a knowledgeable member of the group ; hold off on making suggestions or attempting to redirect until you are well into the group.

Because of the normally strong urge to be included, a child usually tries again after being rejected or simply ignored. Of course, a child can simply repeat his first attempt, a tactic more common among five-year-olds than seven-year-olds. But even preschoolers have some techniques for revising the bid, making it either more forceful or more ingratiating. Five-year-old girls tend to be a bit more flexible than boys in this respect, especially when their motive appears to be to gain entry to the group rather than to perform the activity itself or use the objects or props that the group commands. David Forbes and his colleagues, in their study of "third-party entry" among small groups of five- and seven-year-olds, have pointed out that these two types of motives, which often can be distinguished by the entering child's subsequent behavior in the group, influence the tactics used in attempting access. A second or third entry bid is likely to be met with more elaborated resistance that rationalizes the rejection, a preferred basis being the prerogatives of the group. In defending the group against intruders, members emphasize their solidarity and their rights to control the group's resources. If the group is involved in pretend play, their make-believe roles are one basis for exclusion ; for example, in repelling an intruder from some climbing bars, one boy said, "You can't get in [three times]. It's only for police. It's only for policemen." When the intruder left, the two playmates affirmed their togetherness : "Good. We got the run of *our* policehouse." In such ways, members of a group display and reaffirm their mutual involvement, not only to outsiders but also to one another. After all, they share not only their physical proximity and a use space, but also the psychological sense of doing something together, something "we" have jointly created.

Inside a Group

The processes of mutual construction of an activity can be seen in the way temporary groupings of children negotiate just what it is they are doing, what procedural rules are in effect, how to delimit space, and how to allot materials, props, and the various responsibilities. In situations supervised or arranged by adults, the adult may impose a decision about some of these functions, as when a teacher organizes a group for collaborative work on a project or a parent suggests that playmates might like to have a tea party. But the organizational functions must be fulfilled and are undertaken by the children themselves whenever possible. Sometimes the process is democratic, sometimes one child emerges as the leader, whose suggestions and ideas are likely to be accepted, even solicited by the other members. In pretend play, many, if not all, of these organizational functions are verbalized, so I will focus on how they are accomplished in such play. In a later section of this chapter I will examine the communication within a group involved in teaching and other classroom tasks.

Several investigators have made very similar observations on the two types of communication required for pretend play in groups of two or more children. Dramatization is, of course, essential; the roles must be portrayed, and activities must be enacted. The other type of communication has been called explicit mention of pretend, framing statements, or negotiation. Such communications are essentially metacommunicative; they are about the play and they serve the organizational functions listed above. The proportions of dramatization and negotiation about play differ, depending on the group. On any particular occasion a move directed at defining or organizing the activity may be accepted at once or may lead to a length exchange sequence. The statements concerning various aspects of the group's activity need not occur in any prescribed order, although the assignment of person roles and the definition of the activity usually occur early in the interaction. The following are the major types of negotiable organizing statements, with an example of each (all bearing on the ubiquitous domestic theme):

Definition of situation : "Let's play house."

Assignment of roles : "I'll be the daddy and you be the mommy."-- "And what will he be?" (indicating a third child)--"He's the little boy."

Defining location : "This is the kitchen."

Specifying the action plan : "I'll fix supper for the kid and you get the groceries."

Assigning props : "This is my pocketbook."

Correcting operating procedures and refining the script : "Daddies don't wear pocketbooks."-- "My daddy wears pocketbooks."

Regoing others' performance : "No, you have to really yell at him" (said by a girl when a boy playing Daddy did not speak sternly enough to the naughty "little boy").

Invoking rules relating to the real (versus the pretend) context : "You can't really go out there" (said by a girl when a boy actually started to open the door to the playroom on his pretend trip to the grocery store).

Termination of and/or transition from one organizing theme to another : "Okay, all finished supper."--"What do you want to play now?"

Commenting on the interpersonal climate in the group : "We're playing so we're friends now, right?"--"Right."

Talk is vital to the conduct of play. First, it defines and coordinates the participants' actions. Outsiders also, whether investigators or children hovering on the periphery of the group, poised to attempt entry, must listen in order to know what is going on. Imagine, for example, three children who could be objectively described as carrying boards to an enclosure of cardboard boxes. They could be transporting weapons to a fort, carrying beams to construct a roof for a new house, or lugging skis to a slope. Only their talk will reveal the import of their behavior. Second, the talk inside a group, in addition to organizing and dramatizing, serves the function of displaying and affirming membership, both to insiders and outsiders. The members often verbally mark their territory, reinforcing their consensus not only with references to *we* or *our house*, but also by repeating on another's verbal formulations. In the following example, two three- and a half-year-olds engaged in a building project repeated each

other's phrases, acknowledged ("Yeah") and explicitly linked ("and") their messages.

Boy

There, we need a *lot more* tools.

Boy

We'll need a *lot* of tools.

Yeah, we might need a *lot* or them.

And we need a *lot* of screws.

These same children also used requests for permission in different ways depending on whether they were inside or outside a pretend engagement at that moment. As an outsider, a child would ask, "Can I try it?" and then wait for the response from the insiders who were working with some tool that was part of their pretend scenario (usually permission was not granted). The insiders, however, who had joint rights to their props, would ask permission of one another for a turn at using the prop but would not wait for a response. They would just begin the turn, having established a pattern of taking and relinquishing turns at using what belonged to both within the framework of the shared play theme.

The domestic theme (illustrated in the above examples of negotiations) is the first to appear in young children's play and it is familiar to virtually all children. It can be endlessly varied and can be combined with other widely popular themes such as taking a vacation, surviving a disaster, and illness or injury followed by healing or recovery. If the children are well acquainted and imaginative, variations can become quite elaborate (the previous examples are relatively simple). The value children ascribe to such play and to good players and the fact that the play requires skilled negotiation and flexibility are two reasons that children who have friends are children who engage in more domestic fantasy play than relatively friendless children.

Being Friends

The temporary groupings examined above provide the opportunity for interactions in which compatibility and mutual preferences can develop. Children who have friends are those who can get along with others. In the preschool period getting along means, first and foremost, playing together, taking turns at directing and being directed in play, and being able to defuse or resolve the inevitable disagreements and conflicts of interest that arise. But if friendship grows out of playing together, avoiding serious fights, and sharing things and activities (which is the definition of friendship that a preschooler will give, if asked), friendship itself is a relationship, a connection that extends beyond the actual interaction. Among three- and four-year-olds, the term "friend" usually refers to what they conceive of as friendly behavior, and it is often invoked for purposes of control, "I won't be your friend if you don't let me have a turn." But although young children may not yet consciously or explicitly conceptualize such an abstract idea as "relationship" or think about friends as loyal persons one trusts and admires, they exhibit attitudes toward one another that go beyond the momentary behaviors of compliance or cooperation. Friends want to be together, miss one another when they are apart, and share an intangible bond of memories, secrets, and understanding. In the late preschool period friends engage in fantasy play that reflects their (possibly otherwise inexpressible) concerns about being lonely, their fears and worries; and they are able to reassure one another. Having had more opportunity and greater motivation to understand one another's habits, moods, and preferences, they are better able to resolve misunderstandings and quarrels (and friends do quarrel), and are generally more responsive to each

other than are children who are not friends.

Friends are able to construct together elaborate conspiracies, as John Gottman and Jennifer Parkhurst discovered in their study of good friends in their own homes. They identified a type of verbal interchange they dubbed "shared deviance," which involved planning naughty or forbidden acts, one lengthy example of which was a plot to poison the mother of one of the children by hiding some pretend lethal beans in a dish she was cooking. Mother was not poisoned, but the friends further consolidated their intimacy with the elaborate scheming. In friendships favourite fantasy themes emerge and generally reach more imaginative and creative heights than in the fantasy play of less intimate children, most probably because the shared understandings and mutually constructed history of their play and life together permits the communicative work of play to move beyond the essential organizational negotiations into the exploration of both personal images and feelings and new experiences they want to share and extend.

Teaching

Teaching and learning are achieved in a number of different ways ; planned, explicit verbal instruction on a teacher-selected topic or task, as is common in classroom situations, is only one means by which children or adults transfer knowledge or skill to a young child. Much learning occurs outside of the settings of formal instruction as a child selects a procedure that interests him, watches and listens or asks a question, then recreates the procedure himself in his own way, often modifying his behavior in response to another's reactions. Those reactions include teasing, prompting, challenging, denigrating his ability, and ignoring certain inappropriate behaviours ; these are all ways to shape a child's behavior and promote the learning of such disparate things as playing a jumprope game with the "right" counting-in and counting-out formulas, riding a bicycle, drying the dishes, or even reciting the alphabet. Very little is known about how children teach other children, or whether preschoolers intentionally set out to impart information or skill to a peer or "shape up" a peer's performance on a task. Children do imitate one another, and the preschool-age child is more likely to observe and imitate the behavior of a slightly older child than one his own age or size or a younger one. Children certainly do learn from one another, and in cultural groups in which siblings and other children assume part of the responsibility for child care, their influence may be of considerable importance. In our own culture, research on children's teaching has focused on the use of peer tutors in classroom situations, primarily during the later elementary school years. In these situations "teaching" is likely to take on some characteristics of the explicit verbal instruction conducted by adult teachers. Before examining some of these more formal tutoring techniques, I will discuss some early forms of teaching and ask what three-year-olds know about this type of interpersonal engagement.

If we define teaching or instructing as one person's intentional attempt to convey information or skill he possesses (or believes he possesses) to a person who does not, then one can observe attempts at teaching by very young children. (Teaching and learning do not always go hand in hand, and I will not be primarily concerned with the success of these attempts.) One person sets himself forth as knowledgeable about an object or event or about how to do something, and the other attends to the explanation, instruction, or demonstration and tries to follow. Thus two reciprocal roles are established, one generally taken by an adult, the other by a child. Teaching episodes may be initiated either by the "teacher" or by the "pupil." The teacher may respond to a request or other indication of need, or the teacher, deciding that the pupil needs guidance in some ongoing activity, may initiate the teaching episode. Before

curricula. The curricula are controlled by the Procrustean bed idea. (Prokrustes is the name of the legendary Greek robber who fitted victims to his bed by stretching or lopping). There are wide variations in quality of colleges. But all college students affiliated to one university pursue common curriculum. Again in most of the universities, the curricula are teacher centered not learner centered. Radhakrishnan Commission, while arguing for evening colleges had suggested evening college students should have degree course classes for four years, but this is not found in practice.

(10) Inadequate Student Services

Most of the higher education institutions do not provide adequate student services such as (a) orientation programme for new students, (b) health services-dispensaries, doctors, health check up, etc., (c) residential facilities, (d) day study centres/reading rooms for self-study of students, (e) guidance and counselling facilities, (f) common room facilities with indoor games, (g) college canteens, etc. Thus, the colleges fail to provide minimum facilities for students. This give rise to indiscipline and improper development of students.

(11) Inadequate Material Resources

Most of the institutions do not possess adequate material resources. The affiliating universities ask the colleges to possess adequate material resources within a specified time. But the colleges never oblige. Politicisation of the system gives rise to increase in number of seats without taking into consideration physical facilities such as class rooms. This has led to closure of tutorials in many colleges, although posts of lectures are created taking into account the tutorial work load. In order to have more utilization of physical facilities. Evening College system was introduced. But, cut in supply of electricity and difficulty in procuring kerosene has compelled many evening colleges go for morning classes affecting the functioning of day college classes. Colleges, mostly private managed ones, do not have adequate physical resources. The problem is acute to the extent that a training college of 10 years old did not possess even a toilet. Gupta (1994) reported about university being affected by poor financial resources.

(12) Non-accountability of the Institutions

There have been discussions on accountability in education. But rarely, one finds efforts to enforce accountability. Lack of such efforts has resulted in wastage of human and material resources. There are colleges, which have teachers but do not have adequate classrooms. There are situations where the colleges do not have teachers but have classrooms. Examinations/admissions are affected by such lack of accountability. There have been discussions on teacher evaluation but there has not been much stress on administrator evaluation, hence the quality of programmes of the colleges and university departments suffer.

(13) Inadequate Stress on Non-formal Channels

The University Grants Commission have been encouraging State Governments to go for non-formal channels. Each State does not have an Open University. The University Adult and Continuing Education Centres/Departments need to be made effective so as to divert a large section of student population. Hence, there is more pressure on the formal system.

(14) Inefficiency in Teaching

A good institution is known by its teachers. The institutions of higher education have been suffering

from mediocracy and insincerity among teachers. Private colleges do not pay teachers till the college becomes old enough to receive grants. There are colleges, which take donations from teachers to issue appointment order. Such teachers do not attend college and come to college after a few years, only when they receive salary. Hence, insincerity in teaching is rampant among such teachers. The habit of cheating in early stages of the career sometimes continues throughout the career. In case of government institutions, there are also teachers who principals take action against such teachers. Again, a teacher may go to a class because of compulsion, but may not teach effectively. Sometimes, he or she may create indiscipline among students. This fear forces the principals to become silent over insincerity of teachers. Lack of adequate reading facilities, also makes teachers deliver ill prepared lectures. Modern developments in the field of science and technology lead to enrichment of curricula. An effective teacher need to be a life long learner and need to refresh his/her knowledge voluntarily. But lack of funds does not allow him/her to procure necessary journals and books. There are P.G. Departments which do not even subscribe to a single journal of their subject. There have not ben legislation to restrict teacher absence during term time maximum to 7 days as suggested by the Kothari Commission. The said Commission had also suggested question answer for at least 10 minutes in every period of 60 minutes. One does not find question-answer in majority of class room situation, which attributes to inefficiency among teachers.

Conclusion

Development of higher education in India has not been systematic. The level of development also varies from State to State. The pace of development has been affected by problems stated above. Development not only has been affected by shortage of resources but also by wastage of resources.

Education System Growth of Institution, Enrollment and Faculty

At the time of independence, in 1947, there were only 20 universities and 500 colleges in the country. The number of students and teachers in high education system was also very small. In the years after independence, there has been an exponential increase in all these numbers. There is a ten-fold increase in the number of universities and colleges have registered a twelve-fold increase, while there has been a twenty-five-fold increase in student enrolment.

2.1 Student Enrollment

The major observations are as follows:

- (a) The trend of student enrollment at the macrolevel in the last twenty years is given in Appendix II. However, the student enrollment trends with respect to the State, stage and faculty have been compressed to a five-year period from 1990-91 to 1994-95.
- (b) The growth in student enrollment during this period occurred at a moderate but steady rate, with the compound rate of growth of enrollment working out to 5.5 per cent per annum.
- (c) However, there were wide deviations at the State level from the national average compound growth rate, with Goa showing the highest growth rate of 7.3% and Kerala registering the lowest rate of 3.1% over the same period. The average growth rates of 14 States (including that of Delhi) were lower than the all-India average of 5.5%.
- (d) In 1994-95 an estimated 61.14 lakh students were enrolled in institutions of higher education.

Stage-wise Enrollment

- (a) The preponderant majority of students in the higher education system are enrolled for a variety of courses at the undergraduate level. The students at this level constitute an estimated 88 per cent of all students in our colleges and universities. The percentage of students

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enrolled for Master's level courses is 9.4, while a very small proportion (1.1 per cent) of the students in the institutions of higher education are doing research. Likewise, only 1.3 per cent of the students are enrolled in diploma or certificate courses.

- (b) Most of the students in the higher education system, are enrolled in affiliated colleges. About 88 per cent of all the undergraduate students and 56 per cent of the post graduate students are in the affiliated colleges, while the remaining are located in the universities and their constituent colleges. In contrast, 85 per cent of the research students working for the M.Phil. or a Ph.D. are in the universities. In the case of enrollment in diploma/certificate courses, too, university departments and colleges together have an edge over the affiliated colleges. However, a majority of the students are in the colleges both under-graduate and post-graduate, where the foundations of higher education are laid which should have far-reaching policy implications.
- (c) It may be mentioned, also that the stagewise distribution of students has remained virtually unchanged during the last two decades.

Faculty-wise Enrollment

The distribution of students of students across faculties.

- (a) Four out of ten students in higher education are in the Faculty of Arts, enrolled for courses in Social Sciences and the Humanities which include History and Culture and Languages. Two out of ten students are in Science courses. The ratio for Commerce is also the same as that for Science.
- (b) viewed another way, tells us that three out of ten students are enrolled for courses in Science, Engineering, Medicine, Agriculture and related disciplines.
- (c) Student enrollment in Commerce began moving upward in the 1970s. Commerce appears to have gained primarily at the expense of the faculties of Arts and Humanities. Except for this shift, there has been no other significant change in this pattern of faculty wise enrollment in recent years.

Doctoral Degrees

The number of doctoral degrees awarded showed an increase from 8743 in 1991-92 to 9369 in 1993-94. Out of the total number awarded in 1993-94, the Faculty of Arts had the highest number with 3748 degrees, followed by the Faculty of Science with 3505 degrees.

2.2 Institutions

- (a) An increase in enrollment of this order would not have been possible without the growth in the number of institutions of higher learning, particularly colleges. The rate of increase of colleges, however, has varied across States. Relatively speaking, Maharashtra, which is number 13 in Figure 2.7, registered the highest pace of growth of colleges during the five year period from 1990-91 to 1994-95. The pace of growth was also notably high in Karnataka (No. 10) and Andhra Pradesh (No. 1). Middle level growth is shown by Assam (No. 3), Bihar (No. 4), Gujarat (No. 6), Kerala (No. 11), Madhya Pradesh (No. 12), Orissa (No. 18) and TamilNadu (No. 22). While the number of colleges has increased in some of the small States, in two of the large States, viz., Uttar Pradesh (No. 24) and West Bengal (No. 25), the pace of growth of colleges has been the lowest.
- (b) An estimated 296 new Colleges were established during 1994-95, bringing the total number

of colleges to 8613.

- (c) Of the new colleges that came up in 1994-95, 231 were Arts, Science and Commerce colleges and 65 were professional colleges.
- (d) At the end of 1994-95 the total number of colleges recognised under Section 2 (f) of the UGC Act was 4685 as against 4570 in the previous year.
- (e) The increase, over the years, in the number of colleges has been a function, essentially, of the increase in the number of private but aided affiliated colleges. Nearly 75 to 80 per cent of the total colleges in existence today fall in this category.
- (f) There were 204 universities at the end of 1994-95. The new universities established in the reporting year were:
 1. Jai Prakash University, Chapra (Bihar)
 2. Nalanda Open University, Nalanda (Biher)
 3. Nagaland University, Kohima (Nagaland)
 4. M.P. Bhoj University, Bhopal (Madhya Pradesh)
 5. Swami Ramananda Teerth Marathwada University, Nanded (Maharashtra)

TABLE 3.1
Types of Institution of Higher Education

	1994-95
1. Central/State Universities	164
2. Institutions deemed to be Universities	36
3. Institutions established through State legislation	4
4. Colleges	8613*

* Estimated.

2.3 Staff Strength

- (a) In 1994-95, the total teaching staff in universities and affiliated colleges was 3.01 lakhs as against 2.91 lakhs in the previous year.
- (b) Data for five years, including 1994-95, on the number of teachers by the positions they hold, is given separately for affiliated colleges and the departments and colleges of the universities. The largest number of teachers are in the category of Lecturers. In 1994-95, they constituted 57 per cent and 82 per cent of the teachers in the departments and colleges respectively in the universities and affiliated colleges while 12.8 per cent were Professors and 26.2 per cent were Readers. This constitute 1 : 2 : 4 of the pyramid which is an appropriate distribution.

With the affiliated colleges constituting the largest segment of the institutions of higher education, 77 per cent of all the teachers in the system were in affiliated colleges.

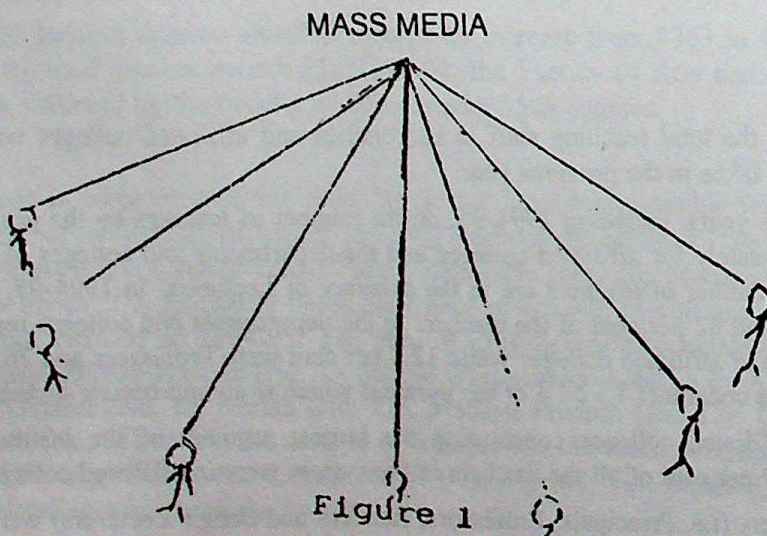
- (c) Senior teachers (i.e. Principals, Professors, Readers and Senior Lecturers) were 13.9 per cent of all teachers in the affiliated colleges in 1994-95.

Development and Educational Communication Unit

The Two Step Flow of Communication

When trying to understand how the effects of media are spread in society, it is important that an attempt be made to determine the paths in the spreading.

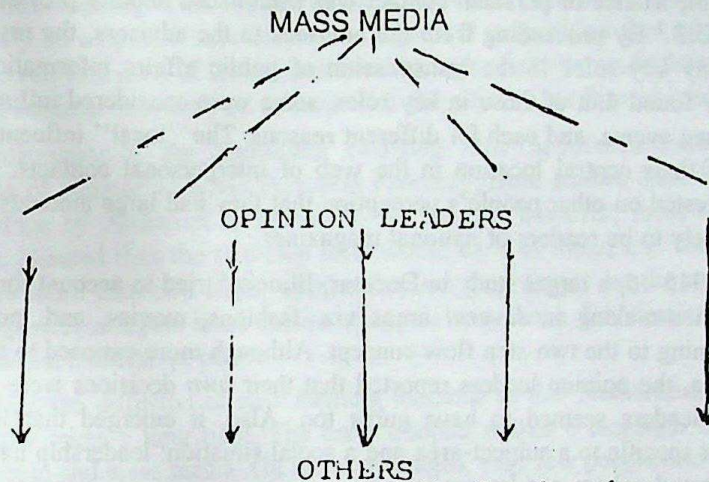
In 1940, three researchers¹ set out to investigate how powerful radio, television and the press exactly were in determining which candidate the residents of Erie County, Ohio, would vote to the U.S. Presidency. Living in a mass society with mass production and a mass culture, they were convinced the mass media had an all-powerful influence on human behaviour—like a hypodermic needle. After all, Goebbels' Nazi propaganda had been so effective in World War II.



Imagine their surprise when they found that on an average day, *a greater number of people reported conversations on the election* rather than listening to a radio speech or reading a newspaper editorial. No changes in political opinions were caused by exposure to the mass media—talks, with other people were more frequent and effective in influencing voting decisions.

Those who claimed they had been approached for advice during casual conversations seemed:

- (1) equally present in every social class and occupation group.
- (2) more exposed to the mass media than those who had not been approached for advice.



At the risk of putting two and two together and making five, the authors suggested the possibility of a two-step flow of information: influences stemming from the media first reach the advice-givers, "opinion leaders", who in turn pass on what they read and hear to the "others". The advisees themselves are not in direct touch with the media.

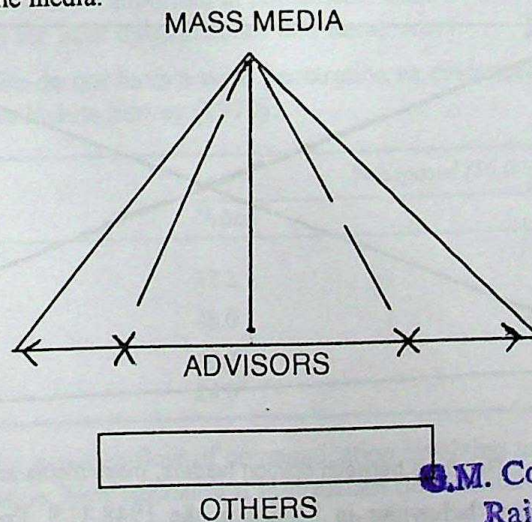


Fig. 3

G.M. College of Education
Raipur, Bantalab
Jammu.

Acc. No.

MoE-2025-Grāhī

This project: (1940) did not find out who the "others" went to for advice. The hypothesized two-step flow could only be true if the "others" were in fact followers of those directly exposed to the mass media. It may even be true that the advisors influence only each other while the "others" stand outside the influence market altogether.

At about the same time, rural sociologists studying the spread of new farm techniques² found that their vision of masses of people being constantly activated by direct contact with the extre-strong mas media was all wrong—people checked with each other before they acted, voted or bought.

Now that the importance of personal contact was established another project was undertaken in a small town in the U.S.³ By proceeding from the advisees to the advisors, the researchers tried to find the people who play key roles in the transmission of public affairs information by interviewing a sample of 86. They found that of those in key roles, some were considered influential in local affairs, some in cosmopolitan events, and each for different reasons. The "local" influentials were found to be leaders because of their central location in the web of interpersonal contacts. The influence of the "cosmopolitans" rested on other people's perception that they had large amounts of information—this group was more likely to be readers of national magazines.

Therefore, in 1945-46, a larger study in Decatur, Illinois,⁴ tried to account for the effect of *various* influences in decision-making in *several* areas viz. fashions, movies, and, public affairs. Strange things began happening to the two-step flow concept. Although more exposed to the media appropriate to their interest-area, the opinion leaders reported that their *own* decisions were in fact influenced by other people: The leaders seemed to have gurus too. Also, it emerged that leadership was not a personality trait but specific to a subject-area and a social situation: leadership had to do with who one is, what one knows and, whom one knows.

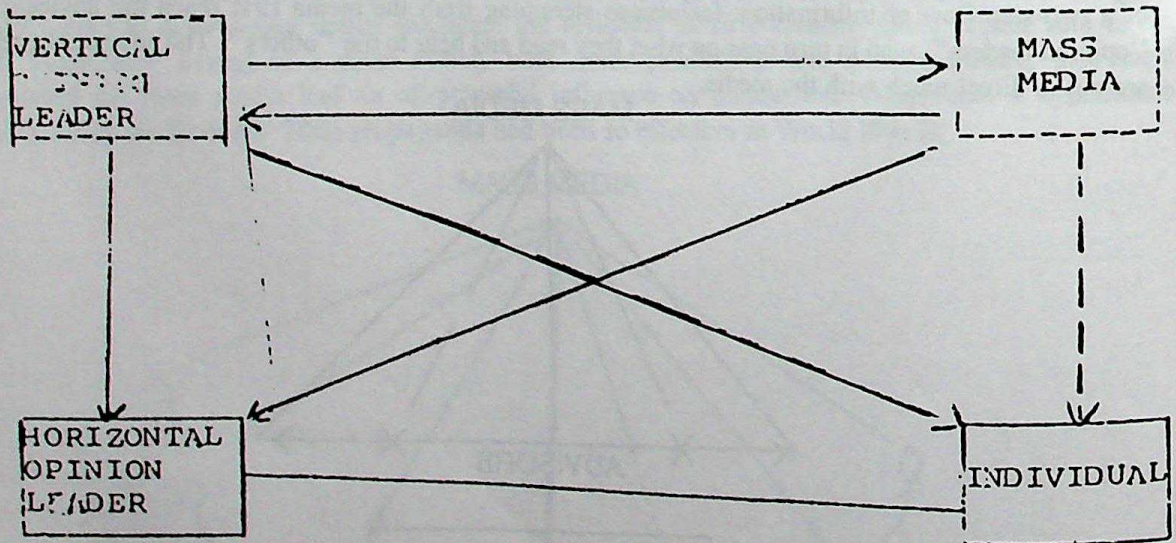


Fig 4.1. : Relations between opinion leaders, mass media and individuals.

Another study of voting behaviour in Elmira in the 1948 U.S. Presidential Election⁵ also found opinion leaders in similar proportions on every socio-economic and occupational level ("horizontal opinion leaders"), conversations concerning the election taking place typically between people of

similar age, occupation and political opinion.

(The arrows denote information channels. The broken lines indicate channels used less frequently than those designated by solid lines)

In 1955, a study of a new drug's diffusion⁶ was undertaken that enabled the mapping of networks of interpersonal relations over time. Here it was demonstrated that the more influential doctors could be characterised by their greater attention not only to medical journals but to out-of-town meetings and contacts also. At the same time, they were as likely to name local colleagues as important sources of advice in their decision-making. This suggests that the greater exposure of the opinion leader to the mass media may only be a special case of the more general proposition that opinion leaders serve to relate their groups to relevant parts of the environment through whatever media happen to be appropriate, be they out-of-town medical caucuses, or contact with the city for the farmer-innovator.

Subsequent confirmation of the traditional two-step flow hypothesis come from news diffusion studies of the deaths of Senator Taft and President Kennedy, from studies done by Sicinski in Poland, and, from studies done by Anderson in Denmark. At present, however, most researchers agree that things are more complicated than the two-step flow would have us think, e.g. the mass communication process may involve more than two steps; opinion leaders may simply be the earlier knowers of new ideas, and their dependence upon mass media channels may be a function of their early knowing rather than their opinion leadership, per se.

A 1964 study on the diffusion of new farming methods in the⁷ Netherlands shows that adoption of a new idea usually takes a long time. The early adopter makes a thorough search for information from all sources-people and mass media. (In the early stages, very few people know about an innovation any way, perforce the early adopter has to turn to newspapers, books radio). The original two-step hypothesis did not recognise the role of different communication channels at varying stages of innovation diffusion and adopter decision-making: Mass media channels are primarily knowledge creators whereas interpersonal conversations are more important in persuasion. Such channel differences at the knowledge versus persuasion stage exist for both opinionleades and non-leaders.

In rural India, mass media do not have a wide penetration as evidenced from this table taken from the first all-India Mass Media Habits Survey (1970):

Media	% Exposed (56,000)	
	Urban	Rural
Press	37.2	7.1
Cinema	48.0	13.4
Radio : Vividh Bharati	30.4	7.2
Radio Ceylon	24.0	6.2

As such, the concept of a two-step flow of communication involving mass media and interpersonal contacts, has limited application. New agricultural information flows mainly from government extension agencies to village influentials, and, from them through word-or-mouth communication, to other sections of the farming population.

What is rile of community TV in village India, given this background.

Formative Evaluation in Educational Radio and Television A Fundamental Need in Developing Countries

There are many factors which influence Third World countries to fashion their radio and television programming after that of the United States and Western Europ. Increasingly this Western-type programming is being viewed as a mistake, and local audiences are calling for more locally relevant radio and television. Formative evaluation can be a very important corrective tool.

Where radio and television have been used for educational and development purposes in Third World nations, voices increasingly call for programmes with a more realistic approach, better designed for actual needs, and more appropriate to the interests and psychology of the target audiences. These are rejections of assumptions made by producers who are either acting upon the wrong conclusions about the audience or who have simply overlooked factors of importance. Consider these comments:

From the Director of Audience Research, Sri Lanka Broadcasting Corporation: "It would be useful to find out which goals the target audience would really like to achieve. Equally important is to find out how the listeners are likely to perceive messages....Another aspect which needs attention is knowing which messages appeal and which do not".

From the Director of Farm Programming, Radio Bangladesh: "Radio Bangladesh was particularly keen to establish the characteristics of the target audience, their information needs and what kind of programmes interest them most, what the barriers are in communicating the message through radio, what kind of information is considered most credible..."

From an educator at the University of Hyderabad, India: "The most formidable problem.. is that the majority of programmes are not based on need... programmes on obesity transmitted to hungry labourers for example, speak for themselves in terms of irrelevance...Message factors such as confidence, credibility and persuasive conclusions are altogether neglected Programmes are produced in isolation from broader social realities..."

These are, in fact, calls for formative evaluation, or as it is also called, formative research. What is formative evaluation? As applied to radio and television programmes, the term refers to broad range of systematic investigations calculated to produce guidelines leading to the programme form, content and manner of presentation that will most effectively accomplish the defined purposes of a programme. In the most basic terms, decisions concerning how to reach the audience, what needs to serve and how best to achieve message understanding and acceptance can be made on the basis of data derived from the intended audience. Materials can be tailored for the actual users instead of being modeled after programmes produced elsewhere in the world for people of different back-grounds, needs and preferences. Assumptions and guesswork are replaced by interpreted data and empirical evidence.

Areas of Formative Evaluation

What kind of undertakings are involved in formative evaluation? What is actually done? A classification of formative evaluation activities will show the range of concern as well as indicate the purposes and functions that formative research can be used to serve.

1. Context Analysis

An inventory of characteristics of the total environment in which a proposed programme series will exist-aspects of culture, language, village life, economy, literacy, traditional information sources,

education, politics, and media use patterns. Consideration of what these realities will mean in the use of and response to the programmes.

2. Needs Assessment

Identification of needs the radio or television programmes might serve, establishment of priorities, and decision as to the precise needs they will undertake to serve in view of all conditions. This leads to the formulation of specific goals and objectives.

3. Problems Analysis

Examination of the root causes of the needs to be served and the problems behind those needs. An attempt to understand more profoundly the origins and dimensions of the needs the programmes will address.

4. Audience Characteristics

The nature of the target audience in terms of age, entry-level knowledge, vocabulary, biases and predispositions, conceptual structures, credibility factors, motivations, interests, value systems, attention span, and other relevant elements of audience profile.

5. Delivery System Constraints

Recognition of limitations stemming from the medium used, viewing or listening conditions nature and dependability of receiving equipment; credibility of the medium; need for reinforcing or interacting systems.

6. Communication Content and Strategies

Selection of the design and content that is most appropriate to achieve the designated goals and objectives. Selection of the means and devices for presenting that content. Generating alternative strategies of presentation and testing alternatives to provide bases for decisions. Research-based answers may be sought concerning such matters as choice of programme format, programme length, segment length, choice of talent or music, amount of entertainment content, amount of new informational content, choice and presentation of visuals, integration of programme elements, amount and means of repetition. Comprehensibility, attention-holding power, activity eliciting potential, integration of supporting media materials, and identification of communication barriers.

7. Input and Feedback Systems

Establishment of either short-term or continuing systems to solicit response from audience groups, classroom teachers, or other qualified observers. Such feedback can be useful in the evaluation of such things as audience appeal, fulfillment of needs, and nature and extent of utilisation. Results would be fed immediately into the production process as a guide to further planning and decision-making.

8. Utilisation Factors

Determining how the programme content is really being used. Careful examination should reveal things that work especially well and things that do not. Inspecting the relationships between the radio or TV programme, supporting media materials and other active sources of information and influence. Determining what changes are needed to improve utilisation and obtain better results.

Some Guidelines for Formative Evaluation Activities

Set research priorities: It may seem that formative evaluation for a broadcast series could become as complicated, time-consuming and expensive as the production project itself. Is it practical and realistic to employ such methods. Fortunately, the role of research in programme preparation need not be a matter of full-scale use or none at all. Obtaining a research-based answer to one key question regarding how a programme is to be done is using formative evaluation and reducing guess work. Only in an ideal situation not yet known to exist could one expect to have research resolve every dilemma along the path of programme planning and production. Research priorities can be established and those questions that seem to be most important can be given the available formative research attention. Moreover, finding obtained in one investigation will often be applicable in future situations, and the stockpile of research-based guidelines begins to grow.

In a situation where instructional radio and TV are comparatively new, it would seem desirable to devote substantial effort to context and needs assessment, determination of goals and objectives, examination of goals and objectives, examination of audience characteristics and consideration of the media combination to be used. These should come before the pretesting of materials and programme attributes.

Work from broad base : Assessment of educational needs should involve input from a representative range of people who know the real needs and nature of that society as well as the specific target audience. The value of responses from members of the intended user group, whatever it may be, should not be underestimated. An inventory of audience characteristics may be accomplished through the careful collection of data from a sample of individuals through personal interviews, careful field observation, or conventional testing. Final decisions as to priority of objectives and suitability of plans may in actuality need to be shared among those in-charge of curriculum or development, programme design and preparation, and others in the educational or political power structure. In any case the question of exactly what are to be goals and objectives of a series of programmes should be clearly understood and defined as an early step in any instructional design process.

Establishment of a research approach : The cooperation of writers and producers is absolutely essential if formative evaluation is to do any good. Since the point of formative research is to show the way to the most effective shaping or improvement of a product, research activities should occur before or during the preparation of scripts. Planners, writers and producers are then able to make their decisions after examination of collected data or special test results. The production specialists must become adjusted to the possibility that audience-derived data may over-rule what they would otherwise do on the basis of prior experience or creative intuition. Matters will proceed much more smoothly if all concerned are deeply committed to the idea that programmes should be constructed, not in accordance with familiar stereo-types, but in the recognition of social realities and audience characteristics, needs and interests.

Be ready to Re-shape the project schedule : Use of formative evaluation is likely to require a substantial revision of the usual project schedule. Without a formative research approach, preliminary discussions that occur before scripting may be relatively brief. Planners tend to engage in enthusiastic airing of personal convictions about needs and objectives and an exploration of basic points of decision. Everyone is eager to proceed. If formative evaluation is employed, however, some of the most important work may be directed towards an accurate determination of needs. An analysis of

detailed audience characteristics may be needed before objectives are laid out and before content and methods are chosen. In other words important research activities occur well before scripting is started. Other research procedures may be desirable before or during production. It appears to be a safe general rule to allow more time for preparatory research than any one expects to be necessary.

Allow for Pilot Testing : Pilot testing of a trial production of the first one or two programmes in a series is probably the most conventional, though not always the most important, application of formative evaluation. Pilot testing determines the extent to which the specific objectives were achieved and exactly which material did not contribute to those ends. Such testing should be done before creative commitments become too strong or too complicated. There must still be time and patience to make revisions in scripts materials, production techniques, and even to do re-testing. Whatever is learned from pilot evaluation is put to use in the revision of still unproduced scripts and in adjustments of performance and production.

Recognize Importance of Question Design : One of the most important skills for those engaged in formative evaluation is question design. The questions used in focussed interviews, questionnaires, and other written instruments seem so easy to compose, but all too often they produce responses which are ambiguous, misleading or extremely difficult to classify. Unfortunately those inexperienced in research often fail completely to recognize the unreliability of the data collected. The quality of whatever research is undertaken should be maintained through continuous and objective scrutiny of the survey instruments by persons with research expertise.

Evaluation of effectiveness, interest in topic, utility of content, attitude change, and level of comprehension are among the procedures in which question design and careful interpretation of responses are especially sensitive matters. When data is collected from teachers or audience members, great care should be taken to avoid or detect response biases such as a desire to show successful cooperation, change self-image or to say whatever will please to those in authority.

Remember the need to adapt instead of adopt : Caution is essential in Third World use of research techniques and communication models developed in Western nations. The local social or cultural context may require substantial modifications in standard research procedures, or even development of new means of gathering information, sampling attitudes and responses, testing comprehension measuring credibility and evaluating effectiveness. Patterns of information dissemination, criteria for credibility, systems of social values as well as audience needs and interests are likely to be entirely different from what is found in the more developed countries. The importance of reinforcement and change agents and the role of government in the communication chain are among the factors that may create attitudes and concepts of communication that are unique to country.

The discussion here has been directed towards formative evaluation as applied to radio and television used for educational and instructional purposes. It must be observed that formative evaluation can be equally useful in the preparation of books, films, pamphlets and any other materials to be used for education or information. Formative evaluation is needed to free us from dependence on assumptions and weakly supported conclusions as to the nature of intended audiences and the best way to structure media materials. Third World countries may find that the answer to their particular needs for improved suitability and effectiveness of communication content may lie in formative evaluation.

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<i>Stages</i>	<i>Action-Responsibility</i>
8. Specification of inputs required to reach goas—group discussions, posters, supply of physical supports.	1. Formative researcher 2. TV Producer and Writer 3. Content Expert
9. Script drafting	1. TV Producer and Writer 2. Content expert 3. Formative researcher
10. Script testing whenever necessary	1. Formative Researcher 2. TV Producer and writer 3. Content expert
11. Prototype programme development	1. TV Producer and writer 2. Formative Researcher 3. Content expert.
12. Prot-type testing	1. Formative researcher 2. TV producer and writer 3. Content expert
13. Production	1. TV Producer and writer 2. Formative researcher 3. Content expert
14. Transmission scheduling	1. TV producer and Writer 2. Formative researcher 3. Content Expert
15. Provision of support materials	1. Utilisation coordinator 2. Formative researcher 3. TV Producer and Writer 4. Content Expert
16. Feedback	1. Formative researcher 2. TV Producer and writer 3. Content Expert
17. Preparation for new series	1. General discussion

Programme Development Steps

1. Audience profile—through audience visits and survey of literature.
2. Needs assessment—audience visits and a surver of literature.
3. Goal statement—content expert and formative researcher analyse the objective and specify the precise behavioural goals that the programme is expected to meet, and in what conceptual order.
4. Listing of alternative teaching strategies to reach the goal.
5. Estimate of initial level of sudience (knowledge, attitudes, behaviour) so the producer knows where to pitch his programme.
6. Writer's briefs—suggestions on take-off situations that the audience is familiar with, to help

illustrate each goal, suggestions on teaching strategies that might be used in these situations.

7. Appeal of past and existing TV material—testing existing formats in the village or feedback from previous programme will indicate what worked for which people, and what did not.
8. Prototype testing—based on the above, two or three alternative prototypes should be developed and tested in video-typed form, before the team knows it is on the right track, the criteria for testing are:
 - (a) Attractiveness and holding power
 - (b) Comprehensibility
 - (c) internal compatibility—proper sequencing of steps and concepts and no contradictions between themes within the same programme/series
 - (d) action-eliciting potential—being a medium that does not demand activity to watch, the content must be such as to demand mental and emotional activity while viewing it and activity after viewing.
9. Progress testing during transmission—occasional feedback
- 10 Summative research—by outsiders.

Phases and Work Responsibilities in Team Production

Stages involved are listed here, along-side the relative work load of producer, writer, content-expert and formative researcher per phase. The order in which the responsibilities are listed indicates the level of activity expected per person at each stage, the first mentioned playing the more active role with the rest of the team playing supportive and suggestive roles in this phase.

<i>Stages</i>	<i>Action-Responsibility</i>
1. Target audience life-style from dawn-to-dusk-preparation of profile from existing publications and villages visits	1. Formative researcher 2. Content expert 3. TV Producer and writer
2. Assessment of needs in the village-what are the problems of this target group?	1. Content expert 2. Formative researcher 3. TV Producer and writer
3. Task analysis an indepth analysis of the roots of each problem	1. Content expert 2. Formative researcher 3. TV Producer and writer
4. Entry level testing existing knowledge, attitudes, behaviour of the target audience	1. Formative researcher 2. Content expert 3. TV producer and writer
5. Goal statement and preparation of specifications per programme what aspects of the problem's roots can TV tackle—in what sequence-how?	1. Formative researcher 2. Content expert 3. TV Producer and writer
6. Listing of alternative TV teaching strategies	1. Formative researcher 2. TV Producer and Writer 3. Content Expert

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7. Development of TV communication strategy

1. TV Producer and Writer

2. Formative Researcher

3. Content Expert

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Planning for Womens' Education After Independence

Perhaps no date in the history of modern India is of greater significance in the emancipation and education of Indian women than the date of our political freedom. India attained independence on 15 August 1947. Its constitution was inaugurated on 26 January, 1950, declaring India a sovereign democratic republic and securing for all its citizens justice, liberty, equality and fraternity. This led to a general quickening of political and social consciousness. But of all the changes in social life, the revolutionary change in the status of women was, no doubt, the greatest. Although the movement for the emancipation goes back to the beginning of the present century and even earlier, it gained tremendous impetus at this particular stage. A specially important feature of emancipation at the time of independence was the emergence of middle class women from the shelter of their homes. We find, since independence, outstanding women in the very forefront of public life. Women have since occupied some of the highest offices in India and abroad. 'Had any one ventured to predict twenty-years ago that in 1953 an Indian woman--the first woman of any nationality--would be elected President of the United Nations, the suggestion would have been regarded as impossible as absurd,' wrote Lady Hartog of Mrs. Vijaylakshmi Pandit. Rajkumari Amrit Kaur served as Health Minister in the Union Cabinet from 1947 to 1957 and was elected President of the World Health Organisation in 1950. Many other women came into the forefront. Some of those who played an important part during this time and even after were Mrs. Indira Gandhi, Mrs. Sucheta Kripalani, Mrs. Renu Chakravarty, Mrs. Durgabai Deshmukh, Mrs. Renuka Ray, Mrs. Hansa Mehta and Mrs. Kamaladevi Chattopadhyaya. When the Constituent Assembly first met on 9 December, 1946 to frame the constitution of the Indian Republic, there were, out of the total membership of 308, eleven women members. In 1952 when the first general elections were held on the basis of adult franchise, women as well as men equally exercised their new rights. With new rights, there came also an increasing awareness of new responsibilities, and several women stood for election to the two Houses of Parliament and to the various State

Legislature. On the eve of the second general election in 1957 there were 43 women members in Parliament--22 in Lok Sabha, 21 in the Rajya Sabha and 102 women members in the Legislature Assemblies of the States.

Now there were not only paid women magistrates but also paid women police. There were women in government service, in all departments of broadcasting and in films. Women became air hostesses, telephone operators and engineers. Many women entered industry and the administrative services. A woman qualified as a paratrooper in the Indian Air Force. In fact, no profession remained closed to women.

There were several results of the wide emancipation which followed in the wake of independence. A general decline in orthodoxy and religious observance was apparent among the younger educated people. As result of wider opportunities, for social life and for travel, there was a definite increase in inter-marriage. Caste restrictions were no longer so binding. The joint family structure had already begun to break down. The cost of living rose to a high level. Economic pressures forced the women, specially middleclass women, to work outside the home to supplement the family income. It was estimated in 1950 that in Bombay about 60 per cent women were working as clerks, as saleswomen etc.

Towards the end of 1953, the Central Social Welfare Board set up by the Government of India decided to organise centres to provide part-time employment for middle-class women of the low income group. The purdah system among Hindu women, except in villages, was quickly disappearing, and the average marriage age was also higher then it had been before independence.

Constitutional Provision

The new constitution of 1950 gave to women all fundamental rights. It stated that 14. The State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India.

15(1). The State shall not discriminate against any citizen on grounds only of religion, race, caste, sex, place or birth or any of them.

16(1). There shall be equality of opportunity for all citizens in matters relating to employment or appointment to any office under the State.

(2) No citizen shall, on grounds only of religion, race, caste, sex, descent, place of birth, residence or any of them, be ineligible for, or discriminated against in respect of, any employment or office under the State.'

The right to freedom was bestowed on women as well as men. '19. (1) All citizens shall have the right--(a) to freedom of speech and expression (f) to acquire, hold and dispose of property; and (g) to practice any profession, or to carry on any occupation, trade or business.'

'The State shall endeavour to provide, within a period of ten years from the commencement of this Constitution, for free and compulsory education for all children until they complete the age of fourteen years. The provision of free and compulsory education for girls as well as boys was a revolutionary development in outlook.

After 1947, this country was faced with the task of remodelling the system of education. The *Quinquennial Review* (1947-52) observed that 'the achievement of independence set before the people

new objectives and imposed on them new responsibilities. The fact that India decided to be a Republic only served to underline the importance of education in the changed context.

The facilities for the education of women and girls were further expanded. We have already noted the rise in the enrollment of young women in colleges and universities. The other notable feature of post-independence period was the growth in the number of educational centres for adult women. Whenever suitable opportunities were offered, women took full advantage of such programmes. However, after partition and the changes that followed, it was impossible to assess the actual number of institutions and pupils. Many institutions closed, many pupils moved from India to Pakistan or Pakistan to India. Now while a portion of India was transferred to Pakistan, some Indian territory, i.e. princely states which did not come under direct British Rule (and which we have until now not included in this work) also came under the Indian Union. Complete figures of these newly formed states during 1947-52 are not available. However, from the literacy percentage of 1951 the precise state of affairs throughout the country can be determined. Literacy percentage had risen to 7.9 for women from 3.4 in 1941. Here also the literacy percentage of Travancore-Cochin the highest in India must have added substantially to the total literacy percentage, while many princely states might have lowered it because the education of women was not, as a rule, actively encouraged by many rulers.

Progress of Women's Education

During 1951-52 there were 23,600 recognised and 650 unrecognised institutions for women in India. Compared to the total figure of institutions for men, which was 273,400 a total of 24,250 institutions of women was not very encouraging. At this time there was a fall in the number of unrecognised institutions. The main reason was that private enterprises were hit by the wartime conditions and political movements. Public financial support had decreased considerably and the government was trying to take over control of more and more private schools.

As regards the number of girl students, it had shown steady progress. The total number of girls under instruction in the whole of India rose from 6.01 million in 1949-50 to 6.7 millions in 1951-52. While the number of girls receiving formal education increased considerably during this period in 1951-52 there were still three times as many boy pupils as girls.

The increase in the number of girls under instruction in professional and special schools is of special interest. The total rose from 72,900 in 1948-49 to 242,100 in 1951-52.

Primary Education

The total number of primary schools including junior basic schools decreased from 13,6988 to 10,111 during 1947-52 among Part-A States, excluding Madhya Pradesh. On the other hand, the number of girl pupils rose from 2.59 millions to 4.13 millions, i.e., 59 per cent, while the number of boys rose by 53.6 per cent in these States. The decrease in the number of girls institutions was due to the fact that in Madras in 1948 all girls' primary schools became co-educational, and in Bengal and Punjab because of partition and other disturbances, the number of institutions suddenly went down.

Secondary Education

Middle Schools (including senior basic schools). The number of middle schools had also decreased slightly. From 1,049 schools in 1946-47 the number fell to 657 schools in 1951-52 among Part-A States excluding Madhya Pradesh. The number of girl pupils had risen from 181,363 to 227,150 or by

25.4 per cent while that of boys rose from 766,753 to 1,037,289 or by 41.9 per cent. But these percentages cannot be taken as definitive as statistics were not available from many newly formed States.

High Schools. As in the period, 1937-47, the period under review also witnessed the increase in the number of high schools. Within five years the number more than doubled. From 518 in 1947 it rose to 1,287 in 1952, i.e., by 148 per cent among Part-A States excluding Madhya Pradesh, while the number of boys' schools only doubled, the number of girl pupils rose from 213,690 to 404,474 or by 89.2 per cent as compared to 74.2 per cent of boys.

Collegiate Education

In the colleges for general education the number of girl pupils was 45,262 in 1951-52 while in colleges for professional and special education it was 12,400. At the university stage the number of women students rose from 18,200 to 31,940 or by 76.2 per cent during 1947-52. The men students increased in number by only 62 per cent.

Progress in State Schools

In Bombay the increase in the number of girls under instruction was especially marked during 1947-52. The union of various princely states in Bombay has already been noted as progressive in its attitude to education.

Government expenditure on girls' institutions rose to 49.6 per cent in 1951-52 from 40 per cent in 1946-47.

The number of primary schools increased from 1,804 to 2,069 and the number of pupils from 95,000 to 1.2 million during 1947-52. Although the number of secondary schools decreased there were actually more pupils in the existing schools by the end of the period under review. The number of girls at the secondary stage increased from 62,629 in 1946-47 to 96,134 in 1951-52 or by about 46 per cent. The number of girls receiving higher education was 9,167 in 1951-52 as against 5,177 in 1946-47. In 1951-52 there were in Bombay six girls' colleges but the majority of the girls attended co-educational institutions.

The S.N.D.T. Women's University, the only University exclusively for women, was given statutory recognition by Bombay Government in 1951. It received the grants from the central government as well as from the state. Four of the six women's colleges of Bombay were affiliated to the University.

In Bombay, the number of women's training institutions for primary school teachers rose to 32 in 1951-52 against 26 in 1946-47 and the number of students also rose to 2,062 in 1951-52 from 1,650 in 1946-47. In 1951-52 there were 115 special schools for women, which gave professional training in different crafts, such as needlework, embroidery, painting etc.

In Coorg, girls usually studied in boys' schools but there were also two girls' schools during 1947-52. In Himachal Pradesh there were four high schools, five middle schools, three lower middle schools and twenty-nine primary schools, for girls in 1951-52, the total number of girls under instruction being 1,913. Hyderabad had thirty-seven schools, thirty-seven middle schools, 1,074 primary schools, 8 professional and 31 schools for special education in 1951-52. The total number of girls increased to 1,187 in 1951-52 as against 1,112 in 1947-48.

The Madhya Bharat Government sanctioned liberal grants for girls' education. Education was

free for girls at primary level. There were 357 primary schools in 1951-52 compared with 257 in 1948-49. Along with the basic subjects, the primary schools also taught physical education, which was compulsory for all pupils. The number of high schools rose from 8 in 1947-48 to 12 in 1952. The total number of girls under instruction was 51,138. Of this number 180 were in B.A. classes. To help women become self-reliant, a craft school for teaching cottage industries, weaving and spinning, was begun at Gwalior. Madhya Bharat Government gave liberal grants to some private institutions in Ujjain and Indore and these also trained students in cottage industries and useful crafts.

Manipur had only one high school, 3 middle and about 24 primary schools for girls. The total number of girl students was 8,800 in 1951-52 as against 2,500 in 1947-48. To encourage education among girls, tuition fees for girls, were lowered in all Government schools.

Madras State showed good progress. It had the largest number of girls, i.e., 1.65 million, under instruction in 1951-52. A decrease in the number of girls' institutions was due to the State's change-over to co-educational education, particularly at the primary level. The number of women teachers in elementary schools rose from 14,676 in 1946-47 to 34,622 in 1951-52.

The total number of secondary schools for girls was 266 in 1951-52 as against 216 in 1946-47. The number of teachers in secondary schools also increased, from 3,376 in 1946-47 to 4,757 in 1951-52. The number of students in Women's Colleges showed a definite increase. From 3,276 in 1946-47 it rose to 5,130 in 1951-52. Of the 12 colleges for general education for women, one college offered an Honours Course. The Women's Christian College, Madras offered an M.Sc. course in Home Science. The number of training schools rose from 82 in 1947 to 92 in 1951-52 and the number of students in these schools also increased. There were 5 professional colleges for women, with 407 students on the roll in 1951-52.

West Bengal had shown a substantial decrease in the number of girls' institutions as well as in number of pupils during 1947-52, (see Plate IV-A and B). The main reason was the partition of the province in 1947. The trend towards co-education was responsible to some extent for the decrease in the number of girls' institutions.

In Orissa the number of girls receiving instruction in all types of institutions rose from 99,000 in 1946-47 to 33,400 in 1951-52. Women were allowed to join all institutions and facilities were provided for them in boys' schools. Girls' education was free at the primary and middle stages. For girls of scheduled castes and hill tribes education was free at higher stages also. The Orissa Government sponsored one first grade college, 9 high schools, 35 middle schools and 4 elementary training schools for women. All the primary schools in the State were co-educational.

Definite progress in women's education was reported in Punjab. The number of primary schools rose from 998 in 1946-47 to 1,073 in 1951-52 and middle schools from 78 to 105. At all levels the number of schools rose, but the total enrollment showed a substantial decline, owing to partition in 1947.

In Rajasthan, women's education had been greatly neglected in previous years, but now this State also showed progress. Girls were accepted in all institutions and every facility was provided for them. In colleges they were exempted from fees.

There was appreciable progress in Saurashtra. The total number of girls under instruction was 65,219 in 1951-52 as against 17,442 in 1949. In the larger towns there were separate schools for girls, elsewhere girls studied in boys schools. There was also one Government Training College for women

primary schools teachers. Here spinning and weaving were taught. About 250 women attended non-government special schools, in which domestic crafts were taught.

In Travancore-Cochin there were 217 schools specially for girls in 1951-52. The number of girls in high schools was 90,926, in middle schools 49,600, in primary schools 551,900 and in special schools 5,544. Thus the total number of girls under instruction was 697,970 in 1951-52.

In Tripura, girls' education was free in primary and middle schools. There was one girls' high school in the capital of Tripura where secondary education was free for girls. In 1951-52 there were 3,620 girls in primary, 990 in middle schools and 1,362 in high schools.

After independence, Uttar Pradesh made steady progress in the field of women's education. The total number of girls in girls' schools and colleges rose from 204,000 in 1947-48 to 349,000 in 1951-52. The number of girls studying in boys' institutions rose from 111,866 to 1,178,572 in the same period. All possible facilities were provided for the development of girls' education. Grants were given for building, equipment and buses to transport the pupils to schools.

The number of primary schools almost doubled and the enrolment increased by more than 100,000. Expenditure was also increased by three times the 1948 figure. The Government provided a lumpsum to establish 250 primary schools every year in rural areas. Compulsory primary education was introduced in 10 municipalities. There were four Government Training Colleges for women at Bareilly, Lucknow, Allahabad and Agra. The Government College of Home Science was established in July 1948.

When the State of Vindhya Pradesh was formed in 1947-48, there was practically no provision for the education of girls. In 1951-52 there were 125 primary schools, 17 Anglo-vernacular middle schools and five high schools exclusively for girls.

The position was much the same in Andaman and Nicobar Islands, with no provision for the separate education of girls. However, a scheme was under consideration, and for the time being girls and boys studied in the same schools.

There were three girls' colleges in Assam, with a enrollment of 447 in 1952 as against four colleges with 336 students on roll in 1947. The total number of girls in all types of institutions was 252,500 in 1952, while it was 165,500 in 1947. Similarly, the total expenditure on these institutions rose from Rs. 1.23 million in 1947 to Rs. 1.48 million in 1952. The figures of 1947 belong to pre-partitioned Assam while those of 1952 belong to reconstituted Assam, hence the figures are not comparable.

In Bhopal, facilities for the education of girls showed a considerable improvement from year to year. In 1952 the records show one high schools, two middle schools, and 34 primary schools for girls. These schools provided an all round general education.

In Bihar the total of girls under instruction rose from 83,800 in 1947-48 to 115,000 in 1951-52. The number of recognised institutions for girls also increased. These were six arts colleges, one professional college, 36 high schools, 11 middle schools and senior basic schools, 2,187 primary and junior basic schools, one nursery school, 25 schools for professional education and 56 schools for special education. The number of trained women teachers also increased from 40.9 per cent in 1947-48 to 43.9 per cent in 1951-52.

Special attempts were made by Bilaspur State to advance women's education. By means of

propaganda, the offering of scholarships and the opening of such new careers as teaching, medicine, social work and nursing, women were encouraged to seek educational opportunities.

In 1947-48 Ajmer State had 99 recognised institutions for girls, consisting of two intermediate arts colleges, six high schools, 11 middle schools, 97 primary schools and two special schools. In 1951-52 the total rose to 113, including 20 centres for adult education. One intermediate college was raised to the standard of a degree college. Enrollment and expenditure both doubled. In 1951-52, the total enrollment was 14,000 and expenditure was Rs. 1.19 million. Since there was no separate training school, women received their training with men in the Government Basic Teachers Training Institute.

Trend Towards Co-education

In almost all the states, education at the primary level in rural and urban areas was co-educational. In urban areas secondary schools were co-educational and at university level, men and women studied in the same colleges, both in rural and urban areas.

In Madras, separate primary schools for girls were abolished by the Government in 1948. In Punjab it was decided in 1951 that all primary schools should be co-educational with a woman as head of each institution. In Bombay the majority of the girls at collegiate stage attended co-educational institutions. In United Provinces there were separate schools for boys and girls at the secondary level. Primary schools were co-educational.

During 1947-52 Coorg led the figures of co-education with 90.4 per cent girls in boys' schools and colleges. Then came Madras State, which had always been the main advocate of co-education with 76.8 per cent. Bombay had 62.9 per cent girls studying in boys' schools in 1951-52 as against 36.4 per cent in 1921-52 and 46.1 per cent in 1946-47.

Bengal too made exceptional progress in this direction. Its percentage rose from 16.5 in 1921-52 to 56.6 per cent in 1946-47 and reached 67.3 in 1951-52. United Provinces had only 34.7 per cent girls in boys' institutions in 1951-52. Its percentage had decreased somewhat since 1921-22 when it was 36 per cent. Among the major provinces the lowest percentage, 13.2 per cent was that of Punjab, although the figure showed an improvement from the 1921-22 figure of 5.4 per cent and the 1946-47 figure of 8 per cent. On the whole co-educational institutions were becoming more popular except at the secondary stage.

Special Scholarships and Courses for Girls

In Bhopal primary education was free for both girls and boys and scholarships and free books were given to poor and scheduled caste students. Transport facilities were provided for girls at a nominal cost.

In Bihar primary education was free. At the secondary stage, free tuition, scholarships and stipends were granted to needy and meritorious students. To encourage the education of women in backward classes, the State Government awarded many scholarships, stipends, book grants etc. In Bombay, after the completion of secondary school such professions as nursing, medicine and teaching were open to girls. The number of women qualifying for the medical profession rose from 171 to 961 during 1947-52. Needlework and housecraft were introduced as optional subjects at the primary stage. Physical education formed an integral part of general education.

In Coorg a 10 per cent reduction in fees was granted to all pupils. Some scholarships for encouragement were also reserved for girls. Himachal Pradesh offered many scholarships for girls.

In Madhya Bharat Government expenditure on scholarships for girls rose from Rs. 3,761 in 1949-50 to Rs. 23,507 in 1951-52. Madras reserved many special scholarships for girls in secondary and elementary schools. In Orissa, girls were awarded scholarships at all stages in their education and in girls' schools elementary sewing and knitting were taught.

Punjab also provided scholarships for girls. Here girls' schools instituted special courses, including domestic economy, sewing, needlework, cooking and music.

In Rajasthan scholarships were awarded on a competitive basis. No special courses existed for girls. In Uttar Pradesh there were scholarships and separate courses for boys and girls to suit different aptitudes and vocations.

Social Education (Adult Education)

The main development of the post-independent period was the new concept of social education, which replaced the earlier idea of adult education. Social education goes much beyond literacy and tries to adjust the adult to the new society in which he has to live. It covers literacy, education in citizenship and health, understanding of science applied to everyday life, acquisition of information and skill that will improve vocational efficiency, development of hobbies and organisation of cultural and recreational programmes.

Complete figures for social education in 1947 are not available. In 1952, there were 43,463 social education centres with 902,660 men and 158,620 women on roll and out of these 420,149 men and 68,986 women were made literate. All Part A States made considerable progress during 1947-52.

In Ajmer fifty social education centres were started, of which ten were for women with an enrollment of 301 in 1952. The agegroup covered was 12-45. Post literacy classes included subjects like health, sanitation and civics. The old Mass Literacy Campaign in Assam gave place to the new Social Education Scheme in 1949-50. Social education centre for women rose from forty-five to fifty-three during 1947-52. Enrollment increased from 903 to 2,118.

In 1948, a small beginning was made in Delhi. Besides literacy social education organizers encouraged games, organised dramas and religious songs. Educational Caravan Units with modern visual aids were also organised to tour from village to village to organise literacy campaigns, games, exhibitions and cinema shows. A Janata College (Alipore) was established near Delhi to train village leaders. In Madras a comprehensive scheme of social education was sanctioned by the government in 1948-49. The main features of the scheme were the opening of adult literacy schools and rural colleges for further education, organising training camps for social workers and visual education. Up to 1950-51, ten rural colleges had been established of which three were for women with sixty-four women on roll.

In Punjab five training camps including one for women were organised. At the beginning of 1950, 134 social education centres including twenty-six for women were opened.

During 1947-52 literacy classes and community centres were organised in Rajasthan. Training courses were arranged for teachers and libraries and reading rooms were established for neo-literates. The total number of literacy centres was 220 including seventy for women.

The Travancore Cochin, the government sanctioned a research and training centre to adult education workers. Up to 1950-51 there were forty-eight training centres, of which seven were for women.

In Uttar Pradesh, a new scheme of social education was launched in 1950, under which new part time adult schools were opened, the syllabus of social education was revised, and more superintendents and organizers were appointed. The total number of women literates during 1950-51 was 4,023 as against 2,336 in 1947-48.

In Bilaspur, Coorg, Hyderabad, Orissa, Saurashtra, Vindhya Pradesh and Tripura also, the schemes of social education were launched during this period.

Report of the University Education Commission

After independence the first Commission set up to enquire into education was the University Education Commission under the Chairmanship of Dr. S. Radhakrishnan. It had to report on Indian university education and suggest improvements and extensions to suit the country's present and future requirements.

On the importance of women's education the report observed that 'There cannot be an educated people without educated women. If general education had to be limited to men or to women, that opportunity should be given to women, for then it would most surely be passed on to the next generation.'

The Commission remarked that 'General education for interesting and intelligent living and for citizenship in large part can be the same for men and women... Women should share with men the life and thought and interests of the times. They are fitted to carry the same academic work as men, with no less thoroughness and quality. The distribution of general ability among women is approximately the same as among men.' Yet it did not follow that men's and women's education should be identical. Until now little thought had been given to the education of women and women. But this was the most essential part of a woman's education.

The Commission further suggested in respect of women's education that 'Her education as a woman should include practical "laboratory" experience in the care of a home and family. Equipment for a girl's education might well include:

1. A baby home.
2. A nursery school, which incidently would relieve nearby mothers during a part of the day.
3. A club for school children and adolescents.
4. A little home for convalescents.
5. A small home for odd people.
6. A home setting where students may have experience in home maintenance and operation, and where they may may act as hostesses.'

In short a girl should learn to cope with all types of problems that she might have to face after marriage.

The report added that 'There is need that the theory of equality of opportunity, but not necessarily identity of opportunity, shall find increasing expression in practice.'

The Commission suggested that certain courses for women should be prescribed in colleges and universities.

These Courses Could Include:

- (i) *Home economics*. A thorough knowledge of this subject would be useful both to the home maker and to the women who is to practise a profession outside the home.
- (ii) *Nursing*. India was in need of a large expansion of this service. It should be developed as quickly as possible with the maintenance of high standards.
- (iii) *Teaching*. With the expansion of education in democratic India, the need for well-educated and well-trained teachers in elementary and secondary schools would probably far exceed the supply.
- (iv) *Fine Arts*. Some measure of appreciation of fine arts and music was also considered necessary after the completion of general education.

Regarding co-education, the Commission expressed the view that at the age of entry to degree colleges, education might be co-educational. Separate institutions at this level would mean an unjustified increase in expense. As far as possible co-educational institutions should be encouraged at degree level.

On women's education the Commission made the following recommendations:

- 1. that the ordinary amenities and decencies of life should be provided for women in colleges originally planned for men, but to which women are being admitted in increasing numbers;
- 2. that there should be no curtailment in educational opportunities for women, but rather a great increase;
- 3. that there should be intelligent educational guidance, by qualified men and women, to help women to get a clearer view of their real educational interests, to the end that they shall not try to imitate men, but shall desire as good education as women as men get as men. Women's and men's education should have many elements in common, but should not in general be identical in all respects, as is usually the case today;
- 4. that women students in general should be helped to see their normal place in a normal society, both as citizens and as women, and to prepare for it, and college programmes should be so designed that it will be possible for them to do so;
- 5. that through educational counsel and by example the prevailing prejudice against study of home economics and home management should be overcome;
- 6. that standards of courtesy and social responsibility should be emphasised on the part of men in mixed colleges;
- 7. that where new colleges are established to serve both men and women students, they should be truly co-educational institutions, with as much thought and consideration given to the life needs of women as to those of men. Except as such colleges come into existence there are no valid criteria for comparing segregated education with co-education;
- 8. that women teachers should be paid the same salaries as men teachers for equal work.'

The Education Commission's recommendations on women's education at collegiate level were important and useful. Moreover, this Commission had a further advantage over the earlier commissions, that it was constituted in independent India with more Indian members, and thus its surveys and rec-

ommendations were more consistent with the conditions and needs of the country. However, the provision of institutions for practical work suggested in the report, was not possible, except in isolated cases.

Co-education. There was no objection to it at the primary and university stages, rather was it favoured. But in view of the limited financial resources available it was suggested that insistence on separate schools at secondary stage would handicap the education of girls, however desirable separate schools might be.

Thus the Commission made the following recommendation:

- '23. While no distinction need be made between education imparted to boys and girls, special facilities for the study of home science should be made available in all girls' schools and in co-educational or mixed schools.
24. Efforts should be made by State Government to open separate schools for girls wherever there is demand for them.
25. Definite conditions should be laid down in regard to co-educational or mixed schools to satisfy the special needs of girl students and women members of the teaching staff.'

Educational Provisions in the First Five Year Plan

We have seen that the number of girl pupils was increasing rapidly in all states but as the Planning Commission itself observed, considering the size of the population, the overall provisions of educational facilities was very inadequate. Educational facilities were provided for only 40 per cent (Figure provisional) of the children of the 6-11 age-group, 10 per cent the 11-17 age-group and 0.9 per cent of the age-group 17-23. In view of this and many other social and economic problems, the Government of India set up a Planning Commission in March 1950 to '(1) make an assessment of the material, capital and human resources of the country, including technical personnel and investigate the possibilities of augmenting such of these resources as are found to be deficient in relation to the nation's requirements; (2) formulate a Plan for the most effective and balanced utilisation of the country's resources.

As regards education it made certain observations which were as follows:

- (1) Overall provision of education was very inadequate.
- (2) The overall structure of the educational system was defective. There were grave disparities between different states in provision of educational facilities, also between urban and rural areas. Of special concern was the neglect of women's education. Whereas women constituted nearly half of the population, the girl pupils in the primary, middle and high school stages in 1949-50 were only 28 per cent, 18 per cent and 13 per cent respectively of the total number of pupils. At the same period the percentage of women students in universities and colleges represented 10.4 per cent of the total enrollment.
- (3) Large wastage occurred at different stages of education. Of the total number of students entering schools in 1945-48 only 40.0 per cent reached class IV in 1948-49.
- (4) The position in regard to teachers' qualifications was highly unsatisfactory. About 40 per cent teachers were untrained There was also a great dearth of women teachers.
- (5) The high cost of education, especially at university level, prevented many intelligent students

from proceeding to advanced studies.

(6) The undue stress on examination and memory work in the existing system of education was not conducive to the development of originality or to a spirit of research.

Targets

The Planning Commission fixed certain targets which were to be reached on the completion of the First Five Year Plan (1951-56).

(1) At the conclusion of the Five Year Plan, educational facilities should be provided for at least 60 per cent of all the children of the school-going age within the age-group 6-11, and these should develop, as early as possible, so as to bring children up to the age of 14 into schools in order to cover the age-groups 6-14 which should be regarded as an integral whole for the purpose of providing basic education. The percentage of girls of the school-going age (6-11) attending schools should go up from 23.3 per cent in 1950-51 to 40 per cent in 1955-56.

(2) At the secondary stage, the target should be to bring 15 per cent of the children of the relevant age-group into educational institutions. The percentage of girls of this age-group attending schools should go up to 10 per cent.

(3) In the field of social education, we should envisage that at least 30 per cent of the people (and 10 per cent of women) within the age-group of 14 to 40 receive the benefit of social education in the wider sense of the term.

Regarding women's education in particular, the Planning Commission realised the through the general purpose and objective of education were the same for both men and women, there were particular spheres of life in which women had a distinctive role and in which they could make a special contribution. The Commission stated that, having consideration for women's special aptitudes such as household management and the field of social service, women must have the same opportunities as men for taking up all kinds of work. Within the sphere of women's education particular attention was to be paid to the needs of different age-groups, of both married and unmarried girls preparing for a profession.

To arouse parents to the need to educate their daughters, the Commission suggested certain steps. They advised that parent-teacher associations could be very useful, and that Bharat Sewak Samaj could undertake propaganda work in this connection.

The Planning Commission also considered the needs of those girls who could not continue their studies owing to social and economic conditions. For them special facilities should be provided so that they could take the examinations privately. Scope should be given to voluntary organisations who held their own examinations and issued diplomas. Wherever possible, the Government should recognise such diplomas.

The Commission recommended the practice of admitting private candidates for university examinations. In this connection part-times schools and colleges should be set up and extension lectures arranged, the courses based on a combination of theory and practice.

The Commission suggested that arrangements be made to allow women to resume their studies at a time when they had leisure and opportunity to do so. Social service organisations should conduct short term courses in general education as well as in crafts.

Women should be taught all those things which would enable them to discharge their household duties. At the secondary and even at the university stage education should be based on vocational and occupational needs as far as possible, so that women might be equipped to take up employment.

The Girl Guide movement should widen its scope to include girls from rural as well as urban areas.

All other states should follow the example of Madras Government in setting up a separate women's welfare department and administering a comprehensive programme in urban and rural areas with the help of trained social workers.

This Plan suggested schemes for every state of education.

(1) *Basic and Primary Education.* Complete units of basic education from pre-basic school to the post-basic school and a training college should be set up, at least one in each state. Research into methods and curricula with a view to improvement should be on of the special functions of these units. The training college of these units should train teachers for junior schools and senior basic schools.

(2) *Social Education.* Janata Colleges should be established, at least one in each state for experimental purpose. The initial object of these colleges shall be to train social education workers, community organizers and administrators. After they had served this need they should be adopted to rural college. Janata colleges should be opened in association with units of basic education.

(3) *Secondary Education.* At least one multilateral high school should be opened at a pilot institution in each state. These schools should have not only sections for liberal arts and science but also sections for technical education, commerce and agriculture. Occupational schools, particularly for children between the ages of 14 to 18, should also be established where possible for experimental purposes. Reseach bureau devoted to the study of problems of secondary education should be established at secondary training colleges. Merit scholarship should be provided in existing public school to enable deserving but poor students to obtain the benefit of these institutions.

(4) *Audio-visual Aids.* Production of these should be encouraged by the establishment of a unit at the Central Institute of Education, which will co-ordinate the efforts of research workers in this field all over the country.

The total allocation for educational development proposed in the First Five Year Plan was Rs. 1516.6 million, including the additional revenue that the local bodies might raise for the purpose. This worked out at an annual expenditure of Rs. 303.3 million.

Progress of Women' Education During 1955-56

By 1955-56, with the stabilization of the political situation and completion of the First Five Year Plan, the educational facilities had generally improved. Though independent India had to face many problems and grave calamities, it had reached a stage of confidence. In the words of Professor Humayun Kabir, then Educational Adviser to the Government of India, seven years of freedom had been seven years of endeavour and expansion in Indian education. Within seven years many difficulties had been overcome and the foundation laid for constructing the truly national system of education needed for resurgent India.

1955-56 marked the end of the First Five Year Plan. It was a time of great activity in almost all fields of education. Significant measures were taken to expand and improve education at various

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levels. The Central and State Government, together with private enterprise, made united efforts and the results was a substantial improvement in all spheres of education. A large number of new institutions were founded and the standard of existing ones improved. New subject and courses were introduced, attempt were made for diversification of education and facilities for teachers' training were expanded.

In the field of elementary education there was progress. New primary schools were opened, other primary schools were converted into basic schools, the curriculum was revised and the teaching of crafts was introduced. The National Institute of Basic Education was set up by the Government of India in 1956 and financial assistance was given from the Central Government.

The All-India Council for Secondary Education was set up to advise Central and State Governments on secondary education. Plans to open multi-purpose schools in place of secondary schools continued. The Central Government sanctioned liberal grants to State Governments to improve existing facilities in science teaching, school libraries, the introduction of craft teaching, the organization of seminars and refresher courses, and training of teachers.

Social education was also developed under the First Five Year Plan. To encourage the production of useful literature at moderate prices, the Union Ministry decided to set up a National Fundamental Education Centre and National Book Trust. The Government assisted financially voluntary organizations doing useful work in the field of basic and social education.

The Government of India also offered scholarships to students, particularly for higher education. A large number of scholarships were awarded to Indian students by foreign governments and international organizations.

For the encouragement of the study of Hindi, scholarships were awarded to the students speaking other Indian languages.

Almost all states reported an expansion in the field of basic education. Modified syllabuses were introduced in primary schools. Teachers were trained in large numbers for basic schools. Diversified courses were introduced at the secondary level in many states. Many secondary schools were converted into multi-purpose schools to give pupils every chance to find their special aptitudes in allround education.

In Delhi, compulsory education was enforced for girls also in the areas under the jurisdiction of Delhi Municipal Committee.

Girl's Institution and Enrollment

The total number of institutions for girls was 25,255 in 1955-56 as against 25,490 during 1950-51, while the number of pupils rose from 6.47 million in that school year to 9.23 million or by 42.6 per cent, during the session 1955-56. The number of primary schools rose from 13,901 in 1950-51 to 15,230 in 1955-56 and the number of middle schools from 1,674 to 2,337. Pre-primary schools doubled their number. The total number of girls' schools for general education was 19,361 in 1955-56 as against 16,720 in 1950-51, i.e., it increased by about 15.8 per cent as against 36.3 per cent increase in the institution of boys. The number of arts and science colleges for girls rose from 69 in 1951 to 104 in 1956 while those of boys increased from 429 to 608.

The enrolment of girls in institutions for general education rose from 6.13 millions to 8.94 millions during the Plan period or by 45.8 per cent, while the increase in the enrollment of boys was only 30 per cent. There was still a difference in the numbers enrolled. Boys enrollment in institutions

for general education was two and a half times that of girls.'

Only seven new colleges for the professional education of girls were founded during 1951-56, while boys' institutions increased by 131. Out of 24 girls' professional colleges, 21 were training colleges. Men's professional colleges included all types, the greater number being medical colleges. Girls' colleges for special education increased in number by seven as against an increase of 13 men's colleges. Enrollment of girls in professional colleges rose from 4,668 in 1950-51 to 9,218 in 1955-56 or by 97.4 per cent as against 63.6 per cent increase in that of boys. 3,294 girls were enrolled in colleges for special education as against 1,767 in 1950-51 i.e., an increase of 86.4 per cent as compared to 54.5 per cent, of boys. Out of the total enrollment, 4,318 girls were studying in teachers' training colleges, 3,987 in medical colleges and about 1,000 in other types of colleges, while the number of boys in such colleges was 139,200. On the whole the total enrollment of boys was fifteen times more than that of girls.

There were 689 vocational and technical schools for girls. They had increased by 229 during the Plan period while number of these schools for boys rose by 506. Enrollment of girls increased in them from 40,888 in 1951 to 62,938 in 1956 or by 53.9 per cent. Boys' increase was about 43 per cent.

Girls' schools for special education decreased in number from 7,555 in 1951 to 4,680 in 1956. It was mainly due to the decrease in the number of school for social education. Otherwise all the other institutions such as those for teaching music, dancing, fine arts and oriental studies, showed an increase.

The number of unrecognised institutions also fell. But the total number of recognised and unrecognised institutions showed an increase of about 15 per cent (excluding school for adult education) as against about 34 per cent increase in boys' institutions. While the increase in the total enrollment of girls (excluding adult schools) was 45 per cent, it was only 30 per cent in boys' schools.

The reason, the number of institutions for girls did not show an increase was that all boys' institutions were now open to girls. Owing to the disappearance of purdah and conservatism, co-education was on the increase, as we shall see later. 70.7 per cent girls were studying in boys' institutions. Girls preferred on the whole to study in boys' institutions, as they were better equipped. From the numbers enrolled, it would appear that more girls than boys were entering the schools. But this increase only slightly lessened the difference in the enrollment figures. The number of boys under instruction was still about two and a half times the number of girls.

Primary Education

The agencies responsible for the administration and control of primary schools were: (a) state governments, (b) local boards, and (c) private bodies, most of which were aided. Except Andhra, Bihar and Orissa States, all Part A states had a majority of primary schools administered by local and district boards in rural area and municipal boards in urban areas. In Parts B and C States, except for Delhi, government schools were in a majority.

The basic education had been accepted as the national system of education. But it had not been possible to provide basic school education for every child within the time proposed by the Constitution. However, the number of primary schools for girls had increased by about 25 per cent. The scheme of school classes in different states in 1954-55.

Of all the state Uttar Pradesh and Bihar had the largest number of primary schools for girls

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including junior basic schools, i.e., 2,700 primary schools each out of a total of 15,230 schools. Andhra, Madras and Travancore-Cochin had no separate schools for girls. Among Part B States, Hyderabad and Mysore had the largest number of girls' primary schools. All the states had shown an increase from 1951 figures.

As regards enrolment, Bombay and Madras had the largest enrollment, i.e., 1.30 million and 1.19 million respectively. Then came Andhra and West Bengal each with 710,000 enrolled pupils. Among Part B States, Travancore-Cochin had the largest number of girls enrolled in schools, i.e., 700,000. The total number of girls in primary schools rose by about 40 per cent during the Plan period. But the difference between the numbers of boys and girls continued as before. The figure for the enrollment of boys was 2.4 times the number of girls.

Wastage and stagnation at the primary stage continued to be alarming, especially in the case of girls. Single teacher primary schools contributed a good deal to this problem. The country's socio-economic structure, in which child labour had a place, was another important factor. In addition, schools were ill-equipped, poorly housed and mostly dull and depressing in environment; the school background could not exercise an effective influence.

The number of girls receiving primary education in co-educational schools was 79.2 per cent of the total enrollment of girls at the primary stage. Andhra Pradesh, Madras, Travancore-Cochin, Andaman and Nicobar Islands and North-East Frontier Agency had only co-educational schools at the primary stage. The lowest percentage were in Jammu and Kashmir and Delhi.

Compulsory education was in force to a certain extent in all Part A States and in some of the States of Parts B and C. The state Governments took the necessary measures to enforce the Compulsory Education Acts passed mainly during 1918-30. Among primary schools teachers 16.9 per cent were women. Out of 117,067 total number of women teachers, 86,262 were trained in 1955-56.

Out of the total expenditure of Rs. 537 million on recognised primary schools, only Rs. 47 million was spent on institutions for girls in 1955-56. Among all the states, Bombay spent the largest amount on girls' primary schools i.e. Rs. 13.7 million. Uttar Pradesh, West Bengal and Punjab spent Rs. 4.91, Rs. 4.45 and Rs. 4.09 million respectively during 1955-56.

Secondary Education

Secondary schools continued to be managed by government, local bodies and private agencies. In most states, the majority of high schools were managed by private bodies. So far as middle schools were concerned, these were mostly managed by local boards and private bodies in Part A States and by the government in Parts B and C States.

The year 1955-56 witnessed considerable development and expansion in the field of secondary education. Attempts were made to reconstruct education at this stage by diversifying it. In addition to languages, social studies, general science and one compulsory craft, girls could elect one subject such as fine arts, Home Science, Humanities, Commerce or Science. Schools where such provision was made were known as multi-purpose schools. This scheme was put into practice in 1954-95.

The secondary schools were sub-divided into middle and high schools. The level of division of secondary classes varied from state to state. The scheme of school classes in different states. The middle stage consisted of two classes in most of the states and two or four in others. The high school or higher secondary stage consisted of two classes in majority of the states, while in others it was

extended over three or four classes.

Middle Schools. The number of middle schools in 1955-56 was 2,337 out of which Uttar Pradesh had the largest number, 512 schools. Then came Bombay and Punjab with totals of 335 and 204 respectively. Among B States, Rajasthan and Mysore had 130 and 118 schools respectively. The total number of middle schools for girls was one-eighth of the number of boys' schools.

The total number of girls in middle stage was 992,500 in 1955-56 as against 603,700 in 1951. Bombay had the largest number of girls in middle stage, i.e., 180,500. Then came Madras (159,600). Travancore-Cochin (136,700) and West Bengal (107,000). Uttar Pradesh and Punjab had respectively 68,300 and 34,000 girls in middle stage. The largest enrollment among Part B States Was in Mysore (53,000) and among Part C States, Delhi (23,000) had the largest enrollment. But the total enrollment of girls was about one-fourth of boys.

High Schools. The number of High Schools for girls was 1,583 in 1955-56 as against 9,225 high schools for boys. While the rate of increase in the number of high schools was 51 per cent among boys it was only 14 per cent for girls, compared to the figure in 1951. Among A States, Bengal had the largest number of high schools for girls, i.e., 183. Uttar Pradesh, Madras and Bombay had respectively 221, 191 and 161 high schools. Travancore-Cochin had 115 high schools, the largest numbers among Part B States. Delhi had always been leading among Part C States, as regards girls' institutions and enrollment. The total number of girls in high schools was 347,500 in 1955-56 as against 206,400 in 1950-51. Bombay had the largest number of girls, i.e., 77,900. Then came Madras (49,000), Uttar Pradesh (20,100) and Bengal (24,100) among Part A States. Travancore-Cochin led the Part B States in the high schools figures, with 75,100 girls and Delhi had 8,500 girls enrolled at this time.

There were 58,929 women teachers in secondary schools. Bombay had the largest number of women teachers, (9,365) while North-East Frontier Agency had only three teachers.

Out of Rs. 530 millions expenditure on secondary education, Rs. 82.6 million were spent on secondary schools of girls in 1955-56 as against Rs. 47 million in 1950-51. Uttar Pradesh spent the largest amount, Rs. 13.8 million on secondary schools for girls. In 1955-56 out of the total direct expenditure of Rs. 155.5 million on girls' institutions, the largest amount was spent on secondary schools for girls. The percentages of expenditure on different types of girls' institutions are shown elsewhere. The reason for the large proportion of expenditure on secondary schools was that co-education at secondary level was not favoured, and certainly girls' secondary schools were more expensive compared with primary school.

Collegiate Education

There was further expansion in advanced level education. Of the colleges exclusively for women there were 104 for art and science, 24 for professional and technical education and 14 for special education. These constituted 13.8 per cent of the total number of colleges. The majority of the colleges were managed by privately aided bodies and the government.

The total number of girls receiving general education at higher stages was 84,092 in 1955-56 as against 40,318 in 1950-51. Similarly 9,218 girls received professional education as against 6,435 in 1951. The total number of girls receiving education at a higher level was therefore 96,660 in 1955-56. Uttar Pradesh had the largest number of girls, 17,968. The number of boys enrolled at this stage

was 639,520 about six times the number of girls.

Of the total expenditure on higher institutions, Rs. 14.0 million, i.e., 5.1 per cent was spent on higher institutions for girls.

The total number of women teachers at this stage was 3,958 in 1955-56 as against 2,390 in 1950-51. Madras had the largest number (777). Bombay had 466, West Bengal 419, Travancore-Cochin 365 and Uttar Pradesh 370.

Training of Teachers

Perhaps the training of teachers in the single most important factor in the reconstruction and expansion of school education.

Attempts had been made in this direction during the Plan period. A number of training schools and colleges were opened. Some of the states received assistance from the Central Government for this purpose. There were 252 teachers' training schools for women in 1955-56 as against 215 in 1950-51. Out of these Madras had 75 schools rose from 17,994 in 1950-51 to 25,881 in 1955-56. Madras had an enrollment of 8,051 students. Next was Bombay with 5,173 on roll. India's fourteen women's teachers' training colleges in 1950-51 rose to twenty-one in 1955-56 with an enrollment of 4,318. Punjab had the largest enrollment of 1,089.

Expenditure

The total expenditure on women's educational institutions was Rs. 121.9 million in 1950-51. This was 9.3 per cent of the total expenditure on education. During 1955-56 the total direct and indirect expenditure on women's educational institutions rose to Rs. 193.4 million, i.e., an increase of 58.6 per cent since 1950-51. But it represented only 9 per cent of the total expenditure on education.

In short, efforts to improve the quality and scope of women's education showed a marked impetus after the completion of the First Five Year Plan. The position in different states can be seen showing girls' institutions, enrollment and expenditure during 1955-56 in the States of the Indian Union.

During 1955-56, out of the total of 9.23 million girl pupils in India, Bombay had the largest number of girl pupils, i.e., 1.81 million or 19.6 per cent. Then came Madras and Travancore-Cochin. Owing to the formation of Andhra Pradesh, Madras lost its high position in the table of enrollment figures. It shows that while Madras, Travancore-Cochin and Andhra State had few institutions compared with Bombay, Uttar Pradesh and Bihar but they compared well in enrollment figures. The reason is that in these states primary schools were 100 per cent co-educational, and this fact mostly accounts for the large number of institutions in other states. Co-educational institutions have not been added to the bars showing the number of institutions. Moreover in Madras, Andhra and Travancore-Cochin people were not prejudiced against co-education at later stages.

This is also the reason for a lower level expenditure on girls' institutions in these stages.

On the whole, all states showed improvement from the previous figures.

Thus, we find that during the First Five Year Plan period there was steady progress in all spheres of girls' education. But in view of the fact that girls and boys were of almost equal number, there was great disparity in the provisions made for their education. The standards of girls' education lagged far behind that of boys'. The people and the government had now come to realise that this would impede the rapid progress of the country.

Evaluation on Efforts

Reform is a continuous process. There never comes a stage in any field when further change is not needed. Education is no exception to this rule. But at times reform becomes a matter of urgency. This urgency was felt in India on the eve of Independence. The formation of a National Government gave a fresh impetus to all movements for reform. Large scale reconstruction in education had taken place since 1947. Already we have noted the process of development at all levels of instruction.

The major feature of the period under review was the formulation of the First Five Year Plan which consolidated all previous reforms. (1) It aimed to adapt educational schemes to the requirements of national planning. (2) Education had to develop the full personality of the individual. (3) Education must be reorientated. (4) Equality of opportunity should be available for all.

But everything could not be done overnight by waving a magic wand. These were the main objects of the Plan. It had also set certain targets to be reached by the end of this period. The rate of progress, however, could not match the hopes and the expectation. Though at the end of the First Plan, the target figure for the girls of the age-group, 6-11, was set as 40 per cent at primary stages, it could reach only 33. In the elementary stage only 5 per cent increase was made while the corresponding increase for boys was 11 per cent. The rate of wastage was greater in the case of girls mainly due to child marriage, household work, poverty and indifferent attitude of men towards it. During 1955-56 women teachers represented only 18 per cent of the total number of teachers employed in primary and secondary schools.

However, the foundation for the change to basic education had been laid. Measures were taken to improve the quality of ordinary primary schools and bring them nearer to a basic pattern. Owing to financial limitations, of course, the Central Government's approach towards education was selective.

Great expansion and development had taken place since 1947. In the field of Secondary education, a number of schemes had been initiated to improve the quality and scope of teaching. Facilities for training of teachers had been further improved. Merit scholarships were introduced in special residential schools. Grants were given to voluntary organizations for improving school buildings, libraries, equipment and laboratories. Steps were taken to improve the standard of text books and develop facilities for vocational and educational guidance. After consultation with universities, boards and state government, far-reaching decisions were taken for the re-orientation of the secondary education. Similar efforts were made in the fields of social education, in universities and in technical education.

In 1950-51, girls accounted for 26.7 per cent of the total number of pupils in primary and middle classes, for 13.9 per cent in high and higher secondary classes and for 12.4 per cent in colleges and universities. By 1955-56 this proportion had risen to 28, 16.2 and 13.6 per cent respectively. During the period, the total number of girls in educational institutions increased from about 640,000 to 920,000. However, the main trend of this period was the diversification of courses, which on one hand were adapted to suit the needs of the country, and on the other hand tried to check the overpopulation of the universities and consequently to some extent, the problem of unemployment of the highly-educated.

Educational Provisions in the Second Five Year Plan

The Second Five Year Plan gave a larger emphasis to basic education, expansion of elementary education, diversification of secondary education, improvement in the standards of college and university

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education, expansion of facilities for technical and vocational education, provision for larger opportunities for girls and women, and implementation of social education and cultural development programmes.

Elementary Education. There were two problems at this stage;

(1) the expansion of existing facilities, and (2) the reorientation of the system of education on basic lines.

The following table shows the progress made in the First Plan and the targets set for the Second Plan.

TABLE 5.1

Progress of Education During the First and the Second Plan Periods

Stage	1950-51			1955-56			1960-61		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
	<i>Estimates</i>			<i>Targets</i>					
Primary (6-11)	59	25	42	69	33	51	86	40	63
Middle (11.-14)	22	5	14	30	8	19	36	10	23
Elementary (6-14)	46	17	32	57	23	40	70	28	49

The directive of the Constitution was that the State should endeavour, within the period of ten years from the commencement of the Constitution, to provide free and compulsory education for all children until they complete the age of fourteen years. In view of this, the figures of the above table show that the goal had not been reached. In all the age groups, the education of girls had not been reached. In all the age groups, the education of girls had lagged behind. Wastage was greater in the case of Girls. Although the problem of different states varied, only broad lines could be suggested to improve the situation.

To prevent wastage, the Second Plan suggested that introduction of compulsory education was essential. In rural areas efforts should be made to give a practical bias to education as far as possible. The Principal remedy for stagnation, i.e., a pupil continuing in the same class for more than the normal period, lay in improving the quality of teachers and teaching techniques.

The Second Plan observed that: 'A most urgent problem is that of girls' education... Special efforts at educating parents, combined with efforts to make education more closely related to the needs of girls, are needed. The situation in each area will need to be studied separately. Where there are difficulties in the acceptance of co-education, other methods will need to be explored.' This meant that there could be provided either separate schools or a shift system for making more effective use of available buildings and other facilities.

The main obstacle in the way of promoting girls' education was the shortage of women teachers. In 1953.54 women teachers accounted for about 17 per cent of the total number of teachers employed

in primary and secondary schools. The task of training women teachers had to be approached as a matter of urgency. The provision for better housing facilities for women teachers in village could be an important step to take. Opportunities for part-time employment might draw educated married women into the teaching profession.

With regards to building, the shift system was recommended by the Central Advisory Board of Education in 1956. Moreover, for the time being, austere standards could be adopted. To achieve rapid expansion, government resources must be supplemented in increasing measure by local community efforts.

Though the basic education programmes had been implemented effectively in the First Plan Period (1951-56), much had still to be done when it is considered that the whole of the elementary education had to be oriented on basic lines.

Secondary Education. The recommendations of the Secondary Education Commission have already been mentioned. It had proposed a greater diversity and comprehensiveness in educational courses which would included both general and vocational subjects. The Commission also recommended the establishment of multipurpose schools and technical schools. These had provision for courses in language, general science, social studies and crafts. The Second Five Year Plan adopted the recommendations as its basis. With regard to girls' education it observed, 'At the secondary stage, the education of girls lags seriously behind. At present, out of the total population of 12 million girls in the age-group 14-17 years, about 3 per cent are attending schools. Plans of states do not provide in sufficient measure for the education of girls, for, the number of high schools for girls in expected to increase from 1,500 to 1,700 only by the end of the Secound Plan. To enable girls to take up careers for which openings exist or are likely to increase (such as *gram-sevikas*, nurses, health visitors, teacher etc.) special scholarship schemes are recommended.' The Second Plan stated that girls' education at this stage required special encouragement.

University Education. By the end of the First Plan, the total enrollment in universities had risen, but it had affected the standard of education. To improve the quality of university and college education and to lessen the amount of wastage and stagnation, the University Grants Commission took a number of measures. These included the institution of the three year degree course, organization of tutorials and seminars, improvement of buildings, laboraoratories and libraries, provision for hostel facilities, stipends for meritorious students, scholarships for research, and increase inthe salaries of universities teachers. Seven more universities were also proposed for the Second Plan.

The total provision was Rs. 570 million for university education in the Second Plan. The greater part of this amount was to the spend on consolidation and increased provision for technical and sicientific education in universities. In the field of technical education long term planning was proposed, though significatnt progress and been made in the first Plan. The Central Government gave substantial grants to individual institutions. A number of scholarships were also instituted.

Social Education. According to the Census of 1951, only 16.6 per cent of the population was literate. Excluding children below the age of ten this proportion was only 20 per cent. There was a great disparity between the literacy of men and women. While men were 24.9 per cent literate, women had only a 7.9 percentage of literacy. There was disparity also between the urban and rural population literacy percentages.

The total allotment in the Plan for social education was Rs. 150 million. The Ministry of Education

proposed to establish a fundamental education centre for training social education organisers, and for continuing study and research in problems relating to social and basic education. Already the national extension and community development programmes, sponsored by the government agencies in co-operation with the people and programmes of voluntary organisations such as Bharat Sewak Samaj, were making efforts towards social education and rural development. Besides literacy, their programmes included health, recreation and citizenship training etc. The Ministry of Education proposed to establish ten rural institutes with the provision of Rs. 20 million for the Second Plan.

Teachers. Though the number of trained teachers increased in the First Plan period, the Second Plan provided Rs. 170 million of increasing facilities for training. The Second Plan proposed to establish 231 training schools and 30 training colleges. The number of basic training colleges and schools was also to be increased. A National Institute for Basic Education was to be established as a research centre.

The responsibility for improvement in the salaries of the teachers belongs to state governments, but temporarily, the Central Government had, however, agreed to assist states to the extent of 50 per cent of additional expenditure. This might be utilised in raising salary scales of primary teacher suitably consistent with local conditions. On the other hand, state governments were advised to reduce expenditure on the construction buildings, and to levy special educational tax for meeting this new expenditure.

It was recommended that with reference to conditions of service each state might consider bringing elementary school teacher in the state into its own service in appropriate cadres. This could enable state governments to extend to teacher adequate benefits of security, pension, provident fund contribution and promotion.

To provide greater equality in educational opportunities to deserving candidates, about Rs. 120 million were provided for scholarships in different fields of study and at different stages of instruction.

PROGRESS OF WOMEN'S EDUCATION

Elementary Education

For several socio-economic reasons, it was not possible to implement the programme of free and compulsory education to all children up to fourteen years in 1960 as mentioned in Article 45 of the Constitution of India. Therefore, the Panel of Education appointed by the Planning Commission suggested in 1957 that an intensive effort should be made to provide by 1965-66 universal education for children in the 6-11 age group. This was accepted by the Government of India and continuous efforts were made to this end. The implementation of the programme was divided into two stages. In the first stage, spread over the last three years of the Second Plan, three centrally sponsored schemes were undertaken. An attempt was to be made; (1) to expand enrollment in the 6-11 age group, (2) to adopt preliminary measures for increasing the enrollment of girls, and (3) to expand the facilities for teacher training. In the second stage an attempt was to be made to provide universal education in the 6-11 age group.

So far as the first stage was concerned, the results, achieved in all the three programmes were satisfactory. Under the scheme of 'Relief to Educated Unemployment and Extension of Primary Education' on the aggregate 60,000 teachers, 1,119 inspecting officers and 5,490 quarters for women teachers were sanctioned to different state governments on 100 per cent basis, during the last three

years of the Second Plan period.

Scheme of Expansion of Girl's Education. As the education of girls still lagged far behind of the boys', it was decided in 1957-58 to introduce a centrally sponsored scheme to accelerate the enrollment of girls in primary schools and to increase the number of women teachers, especially in rural areas. Under this scheme, assistance was given to state governments to the extent of 75 per cent of the approved expenditure, but it was open to the state governments to contribute their quota of 25 per cent or not. They could choose one or more of the following nine approved schemes in accordance with local conditions.

- (1) Free accommodation for women teachers in rural areas.
- (2) Appointment of 'school' mothers;
- (3) Condensed courses for adult women;
- (4) Stipends for women teachers for teachers' training;
- (5) Refresher courses;
- (6) Stipends for high students to take up teaching;
- (7) Attendance scholarships;
- (8) Exemption from tuition fees; and
- (9) The construction of hostels for secondary schools for girls.

Grants sanctioned under the scheme totalled Rs. 93,000 in 1957-58, Rs. 3.08 million in 1958-59, and Rs. 7.04 million in 1959-60. During the year 1960-61, administrative approval totalling Rs. 6.75 million had been issued.

As a result, the total enrollment of girls in classes I to V of primary schools rose from 7.64 millions in 1955-56 to 11.4 millions in 1960-61, while that of boys rose from 17.53 million to 23.6 million during the same period. The increase in the enrolment of boys was 2.31 million more than that of girls. Out of the total enrollment in 1960-61 of 6.71 million of children in the 11-14 age group, girls accounted for 1.63 millions. It is gratifying to note that the figures of increase during the Second Plan period exceeded the estimated target for 1960-61. The estimated figures for girls being 10.96 and 1.47 millions for the 6-11 and 11-14 age groups respectively. The actual percentage of girls under instruction in the 6-11 age group rose to 42 and that in the 11-14 age group to 11.7. At the pre-primary stage the enrollment of girls rose from 30,631 in 1955-56 to 82,122 in 1960-61, while that of boys rose from 44,864 to 96,520 during this period.

Although co-education was adopted as a general policy at the primary stage, the number of primary schools for girls rose from 15,230 in 1955-56 to 19,829 in 1960-61. Similarly, the number of middle schools rose from 2,337 to 4,666 during this period.

Scheme for Expansion of Training Facilities for Primary Teachers. Since trained primary teachers are essential for qualitative improvement of education, the Central Government decided to assist the state governments to expand training facilities for primary teachers during the Second Plan. During 1959-60 and 1960-61, assistance on a hundred per cent basis was given to state governments, (1) to expand the available accommodation in existing institutions, and (2) to establish new institutions where needed.

In accordance with the programmer, 267 new training institutions were established and 27,570 additional seats were provided in the training colleges.

During 1956 and 1961, the number of women primary school teachers had risen from 117,067 or 16.94 per cent to 126,788 or 17.07 per cent of the total primary school teachers. In middle schools, the number of women teachers rose from 23,844 or 16.07 per cent to 83,532 or 24.2 per cent of the total strength.

Remuneration of Primary School Teachers. Three proposals were made at the beginning of the Second Plan. These were: (1) that the minimum basic salary of an untrained primary teacher should be Rs. 40:00 P. and that of a trained teacher should be Rs. 50:00 P.; (2) that the same dearness allowance should be paid to a primary teacher was being paid to a government servant drawing the same salary; and (3) that the old-age provision for primary teachers should include a pension, such as was the case with government servant.

State governments which undertook programmes to implement these proposals were to be assisted on a 50 per cent basis. Considerable progress was made in this direction. The first of these recommendations had been accepted by almost all state governments. Many state governments already did not make any discrimination between the dearness allowance of government servants and schools teachers, so the second proposal was already being carried out. With regard to the third proposal, the Madras Government introduced a system of pension, provident fund-cum-insurance. Other states were also considering the matter. In addition to these advancements, the salaries of teachers improved during the Second Plan period.

Basic Education. At the end of the First Plan (1956), junior basic and senior basic schools were 3.05 and 8.3 per cent of the total number of primary and middle schools in the country. By the end of the Second Plan this number was expected to increase to 10.3 per cent and 20.1 per cent respectively. In order to assist in the programme of basic education, the Government of India established the National Institute of Basic Education. Since its foundation in 1956, it has made considerable progress. For the last few years, Union and State Governments have been celebrating 'Basic Education Week.' This served a useful purpose in creating greater awareness and appreciation of the aims and objectives of basic education.

Secondary Education

A number of programmes for diversification and qualitative improvement of secondary schools had been pursued. Almost all the programmes were included in the state sector. Assistance was given to state governments on a basis which varied from 50 per cent to 60 per cent according to the nature of the scheme. A number of schemes were also implemented through the Directorate of Extension Programmes for Secondary Education which was established in April 1959. One of the programmes of the Directorate was the establishment of Extension Service Departments in fifty-four selected training colleges in the country. Through seminars, workshops and allied services, these Departments have been carrying on a very useful programme of in-service training for secondary school teachers. The programme of examination reforms was also launched during the Second Plan period.

Secondary education expanded very rapidly in all parts of the country. The number of high schools and higher secondary schools for girls was 2,521 during 1960-61, compared to 1,583 during 1955-56. the number of the same schools for boys rose from 9,255 to 14,736 during this period. The enrollment of girls in classes IX to XI (14-17 age group) rose from 317,000 in 1955-56 to 540,690 in

1960-61. The corresponding figures for boys enrollment were 1.54 millions to 2.33 millions. The increase in the enrollment of girls was 70.6 per cent as against 51.4 per cent increase of boys, but the total increase in the enrollment of boys was about three and a half times more than that of girls. The enrollment of girls at this stage also exceeded the original target for 1960-61.

The main items for the reorganisation and reform of secondary education were as follows:

(1) *Conversion of high schools into higher secondary schools.* By the end of the Second Plan (1961), about 10 per cent of the 1,500 schools were estimated to be of the higher secondary pattern.

(2) *Establishment of multi-purpose schools.* During the First Plan, 374 multi-purpose schools were established and their number was estimated to be 1,800 by the end of the Second Plan in 1960-61. Paucity of trained teachers, specially in the practical subjects, had been one of the main causes for its slow progress. In the Third Plan it was proposed to consolidate the scheme.

(3) *Teaching of science in secondary schools.* Through the Directorate of Extension Programme for Secondary Education, steps were taken to improve its teaching. During 1960-61, Rs. 120,800 were sanctioned to the state governments for the establishment of 115 science clubs. Five central science clubs were also established.

(4) *Training and Remuneration of teachers.* The percentage of men and women trained teachers to the total number of teachers was 64.1 compared to 59.7 in 1955-56. The number of training colleges had also increased from fifty-three in 1950-51 to 107 in 1955-56 and 478 at the end of the Second Plan. Almost all the states revised the salary scale of teachers with the assistance of the Central Government on a 50 per cent basis during the Second Plan. The total number of secondary school women teachers was 62,347 or 21.04 per cent of the total secondary school teachers during 1960-61, compared to 35,085 or 18.49 per cent during 1955-56.

(5) *Provision of educational and vocational guidance.* The Central Bureau of Educational and Vocational Guidance had so far been the main Central agency in the implementation of the programme. In the Third Plan (1961-66), a teacher counsellor or a full time counsellor was to be provided in every multi-purpose school.

(6) *Examination reforms.* The programme for reform was launched by the Ministry of Education in 1958. It sought to improve the examination system in the context of the total educational development, including curriculum, text books, teaching aids, techniques of presentation and testing devices. The task of implementing this reform was entrusted to the Directorate of Extension Programmes for Secondary Education, which evolved both intensive and extensive programmes for the purpose.

Higher Education

In the field of higher education a number of important development projects had been taken up with external assistance. These included Home Science Education and Research, the Public Administration Centre at Lucknow University, the introduction of the General Education Programme in selected Indian universities, the Australian gift of reference books under the Colombo Plan, the Indo-United States Agreement for financing an educational exchange programme, and the India Wheat Loan Educational Exchange Programme.

The project for assistance to Home Science Education and Research under the Indo-United States Technical Co-operation Programme continued to progress during 1960-61. Nine American technicians took up assignments in the institutions selected as regional demonstration centres under the project.

Four Indian home science administrators were selected for a three month observation tour of training facilities in the U.S.A. Similarly, four home science teachers for higher studies were trained for twelve months in the U.S.A.

A Home Science Conference was held in New Delhi in April 1960 to review and evaluate the accomplishments under the programme, to plan for the most effective use of the remaining period of the programme, and to consider the future development of home science in India.

The Second Plan target of setting up seven universities had been achieved by the end of 1958-59. The University Grants Commission continued directing and assisting improvement and development programmes of the universities. Progress in this field was hampered, however, due to the shortage of foreign exchange resources, and the inability of universities or state governments to provide the matching funds. By 1960-61, Twenty-three universities had introduced the scheme of the three years degree course. The entire work relating to the implementation of the scheme of the three year degree course had been transferred to the University Grants Commission with effect from April 1, 1959.

The total enrollment in institutions of higher education was 1.08 million during 1960-61. Of that number, there were about 176,000 women enrolled. Arts and science colleges accounted for 149,891 women in 1960-61 as compared 84,092 in 1955-56. The increase in the enrollment of women was 78.3 per cent as compared to 34 per cent of the men during the Second Five Year Plan period.

Professional and Special Education

The large scale expansion and development of professional, vocational and special education is one of the important features of post-independent India. The following table shows the colleges and schools for professional technical and special education in India.

The increase in the enrollment of women in professional and technical colleges was 265.6 per cent as against 162.5 per cent of men during the Second Plan period. In professional colleges women's enrollment was only 11.6 per cent of the total, whereas it was about 20 per cent of the total enrolment in vocational and technical schools in 1960-61.

TABLE 7.2
Enrollment in Institutions for Professional, Technical and Special Education

<i>Institutions</i>	<i>1955-56</i>		<i>1960-61</i>	
	<i>Number of pupils</i> <i>Women</i>	<i>Total</i>	<i>Number of pupils</i> <i>Women</i>	<i>Total</i>
Colleges for professional Education				
Agricultural colleges	37	5,877	149	15,848
Colleges of Commerce	422	58,918	864	78,312
Engineering colleges	12	16,971	333	43,161
Law colleges	347	20,268	805	27,141
Medical colleges	3,987	25,072	8,238	40,402
Colleges for Physical				

Education	48	490	159	904
Teachers Training colleges	4,318	14,280	15,202	46,808
Colleges of Technology	26	2,887	41	4,675
Veterinary Science colleges	13	3,649	47	5,454
Colleges for Special Education	3,294	11,883	7,355	21,855
Total	12,504	160,289	33,193	284,653
Vocational and Technical schools				
Agricultural schools	14	5,230	74	7,736
Commerce schools	10,326	79,567	17,034	112,824
Engineering schools	20	27,512	438	86,302
Technical and Industrial schools	26,863	66,105	29,110	75,694
Teachers training schools	25,881	90,914	31,552	112,682
Schools for Physical Education	372	2,243	515	3,444
Total	63,476	271,571	78,732	398,682

Teachers. There were 5,345 women teachers in colleges for general education, 1,865 in colleges for professional education and 322 in colleges for special education during 1960-61 compared to 2,929; 666; and 156 respectively during 1955-56.

The total number of different types of institutions for girls, their enrollment and expenditure in different states.

Social Education

Intensive literacy campaigns were organised in India, soon after independence. On an average 50,000 adult classes were run every year. One of the important programmes of social education was that of producing literature for neo-literates. The Workers' Social Education Institute established at Indore in 1960 aims at developing a programme of social education for industrial workers. In 1960-61, there were 301,077 women and 1.19 million men on roll in adult centres as against 135,901 women and 1.14 million men in 1955-56. The increase in the enrollment of women was 121.5 per cent as against 4.3 per cent of men.

Other Programmes

The Ministry of Education conducted several programmes for the promotion and development of the Hindi language. The Government of India also administered a large number of scholarships in different fields. A number of important Central schemes were implemented by the Ministry of Education in the field of physical education, games, sports and youth welfare. In the field of social education, pilot projects were conducted.

National Committee on Women's Education

One of the chief features of this period was the enquiry into the special problems of girls' and women's education. The National Committee on Women's Education was set up by the Government of India on 19 May, 1958 under the chairmanship of Mrs. Durgabai Deshmukh to suggest special measures necessary to make an advance in women's education. The members of the Committee and its Chairman visited many states and studied the problems of women's education in general. In particular they were concerned with the individual problems of the states. After painstaking efforts and detailed study, the Committee submitted its report in January 1959. The Committee made valuable suggestions and recommendations.

Recommendations of the Committee

The Committee discussed the problems of women's education of different age groups. They were also concerned with such matters as wastage and stagnation, circular and syllabi, training and employment of women teachers, professional and vocational education, special educational facilities for adult women, the role of voluntary organisations administrative organisations, finance, and some other special problems. The following are the main recommendations:

1. The education of women should be regarded as a major and a special problem in Education for a good many years to come and a bold and determined effort should be made to face its difficulties and magnitude and to close the existing gap between the education of men and women in as short a time as possible¹/₄.
2. The highest priority should be given to schemes prepared from this point of view and the found required for the purpose should be considered to be the first charge on the sums set aside for the development of education.....
3. Steps should be taken to constitute as early as possible, a National Council for the Education of girls and women....
4. The problem of the education of women is so vital and of such great national significance that it is absolutely necessary for the Centre to assume more responsibility for its rapid development.....
5. There should be a senior officer of the rank of Joint Educational Adviser at the Centre to look after the education of girls and women.
6. It would be necessary to create a separate unit in the Ministry of Education to deal with the problems.
7. The State Governments should establish Stage Councils for the education of girls and women.....
8. In each state, a woman should be appointed as Joint Director... responsible for the planning. Organizing and execution of all the programmes pertaining to their education.

The Committee sought the co-operation of the government, non-official organizations, local bodies, voluntary organizations, teachers' organisations and members of the public in the promotion of women's education at all stages.

15. Every state should be required to prepare comprehensive development plans.
16. The system of matching grant should be done away with in so far as the development of the education of girls and women is concerned and the entire financial responsibility for this

programme should be that of the Government of India.

The Committee proposed the allocation of Rs. 10 million for the remaining period of the Second Plan and Rs. 1,000 million during the Third Plan period for the special development programme of women's education.

- '19. The Planning Commission should set up a permanent machinery to estimate, as accurately as possible, the women power requirements of the Plans from time to time and make the results of its studies available to the Government and the public.
20. Government should set up, as early as possible a high power Committee to examine the so-called wastage in the medical and professional education of women.'

Primary Education (6-11 age group)

- '21. School mothers should be appointed in all schools where there are no women teachers on the staff. ...
23. Concession in kind (not in cash) should be given to all girls, whether from rural or urban areas, of parents below a certain income level. Such concessions should cover the cost of books and stationery, school uniforms or clothing and other such necessary educational equipment.
26. Graded attendance allowances to teachers on the basis of average attendance of girls, in their classes, may be introduced in rural areas...
29. The Government should recognise the great importance of creating a strong public opinion in the country in favour of the education of girls and women and take all possible measures for the purpose.

Middle and Secondary Education (11-17 age group)

'31.(a) At the middle school stage, more and more co-educational institutions should be started, subject to the conditions that adequate attention is paid to meet the special needs and requirements of the girls;...

32. (a) All girls (and all boys also) of parents below a prescribed income level should be given free education up to the middle stage...

(b) In the secondary stage free education had not been recommended but in so far as girls are concerned, liberal exemptions--full and partial--from tuition and other fees should be granted to them.

The Committee also recommended suitable hostel facilities. Free and subsidised transport and effective guidance services in schools.

Curriculum and Syllabi

'43. There should be identical curriculum for boys and girls at the primary stage with the proviso that, even at this stage subjects like music, painting, sewing, needlework, simple handwork, and cooking (in the last two years of the primary stage) should be introduced to make the courses more suitable for girls.

44. At the middle school stage, and more especially at the secondary stage, there is need for differentiation of curricula for boys and girls... by inclusion of subjects more useful for girls,...

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45. At the middle school steps should be taken to provide a number of electives, so that girls may choose subjects according to individual tastes and aptitudes and in keeping with the career which they wish to take up later on in life...

48. Educational activities in schools should include programmes that will help in developing the moral sense of the students.

Training and Employment of Women Teachers.

'52. The State Governments should be requested to take vigorous measures to increase the output of women teachers and to employ them in increasing numbers....

53. Immediate steps should be taken to set up additional training institutions for women teachers in all such areas of the country where a shortage exists at present...

56. A determined effort should be made to locate the training institutions for women primary teachers in rural areas.

Provision of hostels and arrangement of creches for the care of the children of the trainees, could add incentive to this training. Wherever possible part-time courses for preparation of women teachers could be organized.

The Committee also suggested many measures designed to induce women from urban areas to accept jobs in rural schools, and to increase the supply of women teachers from rural areas. It further proposed the relaxation of maximum age limit for entry into service in the case of women teachers. The Education Department should maintain a demand and supply list of women teachers. In order to enable women to manage their household duties and do some teaching work also, the Committee suggested more part-time employment of women teachers.

In view of the rising cost of living the existing scales of pay of teachers should be revised and the triple benefit scheme called the pension-cum-provident fund-cum-insurance scheme should be made applicable to the permanent women employees in all institutions.

Professional and Vocational Education

'80. A thorough study of the vocational training needs and of the employment opportunities for women should be undertaken immediately by the Government...

82. Government should formulate a number of "Small Scale Industries Schemes" calculated to meet the needs of women, in consultation with the departments concerned....

84. Government should take immediate action by providing additional seats for women in existing training institutions and/or starting new Training Centres in vocations suitable to women.

94. Vocational guidance services should be organised on a wider scale.

Special Educational Facilities for Adult Women

According to the *National Committee Report* special educational facilities for adult women should be provided for three valid reasons: on humanitarian grounds; as an act of pure social justice; and because of the need of women workers' a number of Five Year Plan projects.

'112. Provision should also be made for condensed courses, which train women for suitable vocations after completion of necessary continuation education.

119. As many institutions providing special educational facilities for adult women as possible should be located in rural areas.

Role of Voluntary Organisations

'130. The existing grant-in-aid codes of the States need a thorough revision,

131. (a) A scheme similar to the Central Government scheme to assist voluntary organizations doing some experimental or valuable work in education should be prepared for girls' institutions only, and special funds allocated for it.

134. Women's Welfare Organisations should be encouraged to take up educational schemes for which aid should be given from the special fund proposed to be created for the development of the education of girls and women.

The Committee also discussed some special problems concerned with the university education of women, the pre-primary stage, and special and professional education. They made certain recommendations for financial assistance, and scholarships to them.

Organization, Administration and Finance

'150. The existing proportion of women officers in the Education Departments should be substantially increased.

151. At the primary and middle stages, an increasing number of women inspecting officers should be employed and all new vacancies should be filled by women as far as possible.

152. At the secondary state, girls' schools should be ordinarily inspected by women officers.

In addition, the National Committee recommended certain measures which concerned the education of both girls and boys. They can be summed up as follows. Wherever primary education is not free, immediate steps should be taken to make it so. Wherever new schools are started, preference should be given to the rural regions. Co-education should be adopted at the primary stage as a general policy. The shift system should be adopted as a temporary device, and under special conditions of emergency. The conditions in primary schools need much improvement in respect of staff, building equipment, educational activities, and content and subjects actually taught, as well as methods of teaching employed. New patterns of cheap, healthy and convenient school buildings should be devised. Night schools should be started for those who cannot attend day schools. Inducement through the provision of mid-day meals should be offered to influence parents to send their children to schools. It was suggested that the heads of schools should convene periodical meetings with the guardians or parents in order to establish contacts.

The Committee suggested certain steps to be taken to reduce the extent of wastage and stagnation at different stages. According to the Committee wastage is mostly due to economic reasons, and in the case of girls, to early marriages. It is also the symptom of a number of other evils. Wastage can be eliminated if the extent of stagnation is reduced, the quality of education improved, the provision of free books and educational equipment and even clothing in the case of girls is made, incomplete schools are eliminated, and the law for the prevention of child marriages is rigorously enforced. School hours should be adjusted to the need of the situation, and steps should be taken to adjust the vacations to suit local needs. Educative propaganda and a rigorous enforcement of the compulsory education law are also needed.

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These are some of the important recommendations made by the National Committee on Women's Education. This was the first Committee ever appointed to examine in detail the problem of women's education. This committee of educationists made such a thorough study of the problem that there cannot be two opinions as to the appropriateness of the recommendations. Each and every detail had been taken into consideration. But the financial resources that these call for are not very easy to obtain. This was not the first time that such suggestions had been given. Many of these recommendations had been made in the Hunter Commission Report of 1882. Since then all the important reports had emphasised the importance of educating girls. It is surprising that, in spite of that, girls' education had lagged behind that of the boys. People had been conservative in this matter, but also the lack of funds at the government level and at the level of the average person, was another important hurdle. The significant feature of this Report of the National Committee on Women's Education is that equal attention has been paid to the development of women's education in rural areas.

The National Council for Women's Education

As suggested by the National Committee on Women's Education, the National Council for Women's Education was set up by the Government of India in 1959. State Councils were also established in different states. The National Council was set up to advise the Government on the problem of girls' and women's education at all levels and stages. The Council made certain proposals at its first and second meetings held during 1959-60. Some of these were included in the Third Five Year Plan (1961-66). Although the recommendation of the Council was to regard the special programme for increasing the enrollment of girls as a centrally sponsored scheme, it was decided that it should be located in the state sector.

At its third meeting held in May 1961 the following major recommendations were made.

- (a) The special programme for the education of girls as a centrally sponsored scheme in the Third Five Year Plan should not be discontinued. Urgent steps should be taken to revise the scheme by finding necessary funds in the supplementary budget.
- (b) To continue to fix physical targets for boys and girls separately in respect of the schemes for each in the General Development Programme, the Council recommended to the Ministry of Education of the Government of India to take immediate steps in this matter.
- (c) To provide funds for the special programme for the education of girls in the Third Five Year Plan, the Chairman was requested to take up the matter with the Chairman of the National Development Council for allocation of more funds for the special programmes.

Although no significant changes could be made in the decisions already taken in this respect, the Third Plan took note of the problems. The Union Education Minister also assured the House of Parliament that women's education would not be allowed to suffer from lack of funds.

Government's Action on the Council's Recommendations

The Central Government took the following action with regard to the recommendations of the National Council for Women's Education.

The Central Education Ministry was unable to implement the recommendation of locating the special programme in the centrally sponsored sector, but it promised to keep a close watch on the progress of the schemes in the state sector. The state governments were requested to give special emphasis to the education of girls in the general programme for 1962-63. The States were also advised

to indicate separately the physical targets for girls and boys. They were to make separate financial provisions for each of them.

All the state administrations were requested to send a note on the measures taken by them in the Third Plan to increase the number of women teachers and also to indicate separately the additional number of women teachers to be appointed in each year of the Plan period. Many states had been asked to train or to employ as primary teachers, candidates from rural areas who had passed the condensed courses of the Central Social Welfare Board.

The Ministry of Education had requested that state governments should provide funds for the organization of special enrolment drives for girls' and women's education weeks. They also asked for assistance from State Councils for intensive propaganda.

The Ministry proposed the Production of one documentary film on girls' education in the next few years.

The Government had approved the proposal of seminars on girls education and accordingly twenty-two seminars were to be organised during 1961-62. Such seminars had already been organized in Manipur, Madhya Pradesh and Mysore.

The India Gandhi Committee appointed by the National Council recommended the establishment of two institutions. These were to train women for high level executive jobs in selected fields where they were badly needed. The Government accepted the proposals in principle and preparatory steps to set up one such institute were taken.

The Ministry of Scientific Research and Cultural Affairs finalised the details of the scheme of polytechnics of girls. Four polytechnics had been established by 1961.

On the recommendations of the Council, the Director-General of Employment and Training in the Ministry of Labour requested the state governments to consider the admission of women trainees in the industrial centres in such trades as would increase their employment opportunities.

With the help of the Planning Commission, a preliminary study of the distribution of the women's working force in industry in 1961 had been made. It showed that 41.78 million women were employed. Of these women 80.3 per cent were engaged in agriculture, livestock, forestry, fishing and hunting and 10 per cent in manufacturing. The next important profession was medical and health services.

Thus, we find that, together with liberal concessions and assistance provided for their education at all states, a general programme for women's social and economic betterment had also been launched.

Educational Provisions in the Third Five Year Plan

The Third Five Year Plan was aimed mainly at expanding and intensifying the efforts to improve education and to bring every home within its influence. In the field of general education, the main emphasis was to be on the provision of facilities for the education of all children in the age-group six to eleven, the extension and improvement of science teaching at the secondary and university stages and the development of vocational and technical education at all levels. The Third Plan provided for the expansion and improvement of facilities for the training of teachers at every stage of education, and an increase in the number of scholarships, free ships and other assistance to pupils. The most important of all the provisions was the special emphasis given to the education of girls. The aim was to reduce substantially the existing disparity in the level of educational development of boys and girls.

It was proposed to orient all elementary schools into the basic pattern. The expansion and improvement of facilities for post-graduate studies and further research was another objective of the Plan. The reorganization of university education along the lines of the three year degree course was to be completed. At all stages, the Plan aimed at developing both skill and knowledge and a creative outlook as well as a feeling of national unity and understanding of common interests.

Pre-School Education : In the past, only voluntary organizations had been working to promote this. The need for pre-school education had been stressed in recent years, and the enrollment of children was 178,642 during 1960-61 in the Second Plan, from having been 28,646 in 1950-51 and 75,595 in 1955-56. The enrollment of girls was 82,122 in 1960-61 as against 30,631 in 1955-56 and 13,307 in 1950-51. The third Plan provided for the setting up of six training centres for '*bal sevikas*.' In the education programme Rs. 30 million had been allotted for child welfare and allied schemes at the Centre, and about Rs. 10 million in the states, in addition to the resources available under the community development and social welfare programmes. The schemes for child welfare being formulated by the Ministry of Education, included the improvement of existing '*balwadis*' and the opening of new *balwadis*, the expansion of training programmes for *bal sevikas*, and number of pilot projects for child welfare in which education and the health and welfare services were to be organised in an integrated manner.

Elementary Education. Although the Constitution envisaged the provision of free, universal and compulsory education for all children up to the age of fourteen, it was agreed early in the Second Plan because of the immensity of the task, to create initially facilities for the education of all children in the age group six to eleven. This was one of the chief aims of the Third Plan, to be followed by the extension of education for the entire eleven to fourteen age group during the Fourth and Fifth Plans.

The authors of the third Plan had in mind the fact that a very large gap still existed between the proportion of boys and girls attending school. While 80.5 per cent of boys in the six to eleven age group attended schools, the percentage of girls in this age group attending schools was only 40.4 in 1960-61. Among the different states the proportion was below average in Rajasthan (15 per cent), Uttar Pradesh (20 per cent), Jammu and Kashmir (21 per cent), Madhya Pradesh (19 per cent), Bihar (27 per cent), Orissa (24 per cent and Punjab (36 per cent).

The recommendations of the National Council for Women's Education have already been mentioned in the previous chapter. To some extent, proposals on these lines had been embodied in the Plans of the states. The Third Plan proposed to review the various provisions which had been made in these plans at an early date, and from the second year of the Plan to take additional steps to expand especially those facilities which aimed at enlarging the supply of women teachers and attracting them to services in rural areas.

In backward areas, educational institutions were to be so located that almost every child could go to a school within easy walking distance from her home.

To overcome the problem of wastage and stagnation at this level. The Third Plan proposed the introduction of compulsory education, the appointment of trained and qualified teachers, improvements in the methods of teaching, promotion of greater understanding on the part of parents of the desirability of letting their children remain at school, and the planning of school holidays so that they coincided with the harvesting and sowing seasons.

In view of the importance of the programme for extending education to all children in the age

group six to eleven, it was made plain in the Third Plan that financial considerations should not stand in the way of its execution in any state. But taking other factors into account, for example, the slow response of the backward and poorer sections of the population, the lack of sufficient teachers and so on, it was estimated that by the end of the Third Plan, about 90 per cent of the boys and 62 per cent of the girls would be at school, an overall percentage of 76.4 for the age group six to eleven. It was expected that about 15.3 million additional children would come into school of whom 8.6 million were likely to be girls as seen in the Table 5.3.

Although the difference in the level of development between states would be narrowed to some extent, it would still be quite considerable.

Middle School Education, (11-14 years). During the First and Second Plan period, the number of children in the age group eleven to fourteen doubled, while the number of girls increased nearly three times. However, at the end of the Second Plan in 1961 only 10.8 per cent of the girls were at school as compared with 34.3 per cent of the boys. The Third Plan fixed the enrolment target in classes VI - VIII at 28.6 per cent of the total population of the age group eleven to fourteen. But the proportion of girls enrolled was likely to be less than 17 per cent, against 39.9 per cent for the boys as shown in the table 5.4.

TABLE 5.3
Pupils in Age Group 6-11

Year	Enrolment in classes I-V (in million)			Percentage of population in age group 6-11		
	Boys	Girls	Total	Boys	Girls	Total
1950-51	13.77	5.38	19.15	59.8	24.6	42.6
1955-56	17.53	7.64	25.17	70.3	32.4	52.9
1960-61	23.38	10.96	34.34	80.5	40.4	61.1
1965-66	30.12	19.52	49.64	90.4	61.6	76.4

TABLE 8.2
Pupils in Age Group 11-14

Year	Enrollment in classes VI-VIII (in million)			Percentage of population in age group age group 11-14		
	Boys	Girls	Total	Boys	Girls	Total
1950-51	2.59	0.53	3.12	20.7	4.5	12.7
1955-56	3.42	0.87	4.29	25.5	6.9	16.5
1960-61	4.82	1.47	6.29	34.3	10.8	22.8
1965-66	7.00	2.75	9.75	39.9	16.5	28.6

According to the Third Plan, in the more backward areas it was necessary to concentrate on the expansion of primary education. Only after that could rapid development of middle school education

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take place.

The question of providing facilities for training in suitable vocations on a part-time basis was under consideration. The Third Plan proposed the organization of such courses to air increased extent at middle schools, basic schools, junior technical schools and other centres. The possibility organizing vocational training on a full-time basis for this age group was also to be studied.

In considering the expansion of facilities for girls' education, the Third Plan studied the various recommendations of the National Council for Women's Education.

In the entire age group of six to fourteen the number of children at school had gone up from 22.3 million to 40.6 million. The proportion of the total population, in the age group rose from 32 per cent to 48 per cent. While the proportion of body enrolled had risen from 46 per cent to 65 per cent, that of girls rose from 18 per cent to 31 per cent during the period 1950-51 to 1960-61. The Third Plan postulated an increase in enrollment in this age group about equal to that achieved during the preceding decade. For girls, the proportion of the age group enrolled was estimated to rise to about 46 per cent, and for boys to about 73 per cent, the overall proportion increasing to about 59.9 per cent.

Basic Education. The reorganisation of school education along basic lines had been a key part of the programme since the First Plan. During the Third Plan it was proposed to convert about 37,760 schools into basic schools, to orient the remaining schools to this basic pattern and to remodel all training institutions along basic lines. The Third Plan suggested the establishment of such schools in urban areas and the linking up of basic education with the development activities of each local community. Progress in this direction could not be very fast since the majority of the teachers had yet to be trained in the techniques of basic education. In order to complete the process of orientation during the earlier phase of the Third Plan, it was proposed that the schools should be given the simple equipment needed for the purpose, and teachers who had not been trained in basic education should be given short orientation courses.

Towards the end of the Second Plan, 276 new training institutions were set up in preparation for the introduction of universal primary education during the Third Plan. The state schemes provided for equipment, buildings and other facilities for these and other institutions.

The Third Plan emphasised the need for the introduction of local community efforts as supplementary to the provisions made in the states' plans. Community efforts might be in the form of the organisation of enrollment drives, persuading parents to send girls to schools, the construction of school building and provision of additional equipment and furniture for schools, and midday meals and free clothing for the poorer children. It was suggested that the state government should endeavour to provide for community efforts, at any rate wherever local communities came forward to take their due share in them.

Secondary Education. The expansion of secondary education had encouraged a larger range of abilities and aptitudes in pupils. Hence, secondary schools had to be so reorganised that they would provide a diversified educational service to pupils according to their several needs. The programme for the reorganisation and improvement of secondary education, which was started following the report of the Secondary Education Commission, had developed along several lines and was designed both to enlarge the content of secondary education and to make it a separate and distinct part of the educational process. The measures taken were : the conversion of high schools into higher secondary schools, the development of multi-purpose schools with provision for a number of elective subjects

along with, and in addition to, the academic course, the expansion and improvement of facilities for the teaching of science and the provision of vocational and educational guidance. The other steps in this direction were the improvement of the examination and evaluation system, the extension of facilities for the education of girls and backward classes and the encouragement of merit by means of scholarships.

All these changes involved a major revision of the secondary school curriculum and the introduction of new techniques and procedures. Secondary school teachers had also to be thoroughly prepared to handle the new subjects efficiently. The consolidation and improvement of quality in all aspects of secondary education reorganisation was therefore, especially emphasised in the Third Plan.

Although the number of girls in classes IX to XI increased from 200,000 to 520,000 during the two Plan periods, girls constituted less than one-fifth of the total number attending secondary schools. As is clear from the following table, at the end of the Second Plan only about 4.2 per cent of the girls took advantage of high school education, as compared with about 18.4 per cent of the boys in the age group fourteen to seventeen. The disparity between the enrollment of girls and boys was very serious for it affected the number of women teachers, nurses, village level workers, social workers and others. The Third Plan postulate about 100 per cent increase in the number of girls in schools but their proportion in the age group as a whole would be 6.9 per cent, as compared to 23.7 per cent of boys as shown in the Table given below :

TABLE 5.5
Pupils in Age Group 14-17

Year	Enrollment in classes IX-XI (in million)			Percentage of population in age group 14-17		
	Boys	Girls	Total	boys	Girls	Total
1950-51	1.02	0.20	1.22	8.7	1.8	5.3
1955-56	1.58	0.30	1.88	12.8	2.6	7.8
1960-61	2.39	0.52	2.91	18.4	4.2	11.5
1965-66	3.57	0.99	4.56	23.7	6.9	15.6

Science Education. The Second Plan emphasised the expansion and improvement of science education at the secondary stage. By the end of the Plan a programme for the teaching of general or elementary science had been introduced in almost all secondary schools. In the Third Plan, in addition to providing for general science tuition in all secondary schools as a compulsory subject, more than 9,500 out of 21,800 secondary schools were also to have science of an elective standard. A number of supporting measures were also proposed to improve and strengthen the teaching of science. The shortage of teachers was also to be overcome as much as possible by increasing facilities for science education at the university stage, and by providing various type of in-service training in content and methodology for the existing science teachers.

Multi-purpose Schools. During the first two Plans, 2,115 multi-purpose schools were established. These offered one or more practical courses in technology, agriculture, commerce, home science and fine arts in addition to the humanities and science. But the lack of teachers, insufficient teaching material, especially text books and hand books, the limited range of elective courses and inadequacy

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of educational and vocational guidance facilities, were some of the difficulties in its proper implementation. During the Third Plan it was proposed to concentrate on the consolidation of the scheme by strengthening the institutions already established. An integrated teacher-training programme for the multi-purpose schools was suggested and for this purpose the establishment of four regional training college was proposed by the Planning Commission in the Third Five Plan to prepare teachers through in-service and preservice training programmes both in the practical and the scientific subjects.

Educational and Vocational Guidance. During the Second Plan, in addition to setting up a Central Bureau of Educational and Vocational Guidance, State Bureaux of Educational and Vocational Guidance were established in twelve states. These bureaux had been carrying out programme of training of career master and counsellors, test construction and guidance services to schools, but this guidance movement had not made significant impact on secondary schools. It was proposed in the Third Plan to strengthen the State Bureaux so as to help them to carry the guidance programme far into the field, and also to ensure a minimum programme of career information service in as many secondary schools as possible.

Training of Teachers. The number of training colleges had risen from fifty-three in 1950-51 to 236 in 1960-61. In the Third Plan this number was expected to increase to 312. The Plan sought to expand and reorganize the existing training colleges to increase the supply of trained teachers, and to align them with the current needs of secondary schools. Pre-service training of teachers in science and social studies, the introduction of new techniques of evaluation, the provision of a number of special subjects, such as guidance and audio-visual education, and the organisation of research were especially emphasised by the Third Plan. To provide inservice training facilities, extension centres were established during the Second Plan at fifty-four selected training colleges. These centres had been carrying out a comprehensive programme of inservice training, including seminars, workshop and conferences, audio-visual, library and guidance services, and publications. It was proposed by the Planning Commission to extend the scheme to a larger number of training colleges during the Third Plan with the ultimate object of making the extension service an integral part of the work of every training college.

University Education. The number of universities had increased from twenty-seven in 1950-51 to thirty-two in 1955-56 and to forty-six in 1960-61 and about a dozen more universities were likely to be added during the Third Plan. The number of colleges exclusive of intermediate college rose from 772 in 1955-56 to 1,050 in 1960-61. During the Third Plan the addition of about seventy to eighty colleges every year was suggested. For diverting students to vocational and technological education larger facilities were provided. In addition, proposals for evening colleges, correspondence course and the award of external degrees were under consideration. A large number of scholarships were provided to the best science students.

Three-year Degree Course. The three-year degree course also included in improvement in the teacher-pupil ratio, the introduction of the tutorial system, general education, improvement of laboratories and instructional building. Periodical conferences, seminars, summer schools and refresher courses were to be organized as in the Second Plan for teachers in different subjects. Teachers could obtain special grants for visiting centres of research for short periods. Among additional amenities for students were the provision of hostels, hobby workshops, non-resident students centres, health centres, counselling and students centres, health centres, counselling and student aid funds. These were to be continued in the Third Plan.

Women's Education. The Plan considered the need for increasing the proportion of women students in colleges and universities to take up different occupations. The proportion of women students to the total enrollment in Indian universities was about 13 per cent in 1955-56, about 17 per cent in 1960-61 and was expected to be about 21 per cent in 1965-66. Apart from providing facilities for the increasing number of women students during the Second Plan, courses of special interest to women were initiated such as home science, music, drawing, painting, nursing and so on. These facilities were further expanded. During the Second Plan, the University Grant Commission provided liberal assistance for women's colleges and women's hostels. The Third Plan sought to continue it. In order to encourage women students, special scholarships were further provided. A proposal for setting up an institute for training women in organization, administration and management was under examination.

Girls' Education. While the additional number of boys enrolled in schools was 13.2 millions, the additional enrollment of girls was only 6.8 million during the period 1950-51 to 1960-61. The census of 1961 had also shown that, as against a literacy rate of 34 per cent for men, only 12.8 per cent of the women were literate. Hence the most important objective during the Third Plan was to expand facilities for the education of girls at various stages. According to the programme, taking the age group six to fourteen the proportion of girls at school should have increased to 46 per cent compared to 73 per cent for boys. Out of about 20.4 million additional children to be enrolled in schools during the Third Plan in the various age groups, about 10.3 million were expected to be girls, their proportion in the lowest age group being 56 per cent. Even to achieve the above mentioned estimates, a massive effort was needed throughout the country.

Of the resources available under the Plan for the development of education, about Rs. 1,759 million were earmarked for girls' education of which Rs. 1,140 million were for education at the primary and middle school stages. Some provision had also been made for special schemes intended to support the general programme of girls' education. The Third Plan suggested that in implementing the various provisions in their plans, state ought to keep in view detailed recommendations contained in the Report of the National Committee on Women's Education. Special emphasis was laid on creating suitable conditions for encouraging parents to send their daughters to schools educating public opinion, increasing the number of women from rural areas who could take up teaching, and inducing women from urban areas to accept posts as teachers in rural schools. It was proposed to evaluate carefully from year to year the progress made in implementing the programme for girls' education and to take such further measures as might be needed for realising the targets set for the Third Plan. In this field, the Plan considered it necessary to study closely such successful methods as might be evolved in different parts of the country and to make such experience generally available. In drawing up annual plans also, care was to be taken to see that the programme was not held back for lack of financial resources and that the social and organisational limitation which impeded progress were eliminated as early as possible.

It was also suggested that scholarships should be awarded to promising students in need of assistance, and the continue the aid to the higher stage in education. To help overcome the inadequate supply of science and women teachers, it was proposed to select promising students at the post-matriculation stage and assist them with scholarships and stipends through the entire period of training. They were to be given the prospect of assured employment and in return to be under an obligation to serve for a prescribed period.

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Teacher's Salary Scales and Conditions of Service. This problem received special attention towards the end of the First Plan. During the Second Plan considerable progress was made, and Rs. 300 million were estimated to be incurred on increasing the salaries of school teachers. In the Third Plan also, some states made provision for improving teachers' salaries and allowances. Attempts were made to improve the economic and social status of teachers. The Plan also provided for merit scholarship for the children of elementary and secondary school teachers.

Educational Research and Training. It was proposed to establish a National Institute of Educational Research and Training which sought to merge the existing Central Institute of Education and other central institutes. This autonomous organization would cover different areas of educational research, including elementary, secondary, social and audio-visual education, also the training of key personnel in these and other fields.

The Third Plan also made suggestions about the problems of teaching crafts, schools libraries, post-graduate studies and research, rural institute, text books, examination reforms, development of Hindi and Sanskrit, education of the handicapped, physical education, sport and youth welfare activities, social education and adult literacy, libraries, cultural programmes and national integration.

Progress of Women's Education

A steady rate of expansion continued in education during the Third Five year Plan. It is estimated that the target of bringing 9.84 million more girls of the six to fourteen age group to school may have exceeded by the end of the Plan. Greater demand for facilities at the middle schools, and high and higher secondary schools had been made, Similar extensions had taken place at the college and the university stage. The programmes for the improvement of education at all stage were implemented as regards science education, the provision of qualified teachers, equipment and library facilities. The number of scholarships and fellowships had been increased.

Elementary Education

The following table shows the enrollment (in millions) at the elementary (primary and middle) stage of education.

TABLE 8.4

<i>Enrolment in classes</i>	<i>Positions</i>	<i>1960-61 Target</i>	<i>1961-62 Estimated</i>	<i>1965-66 Positions (2 + 4)</i>
1	2	3	4	5
I to V				
Total	34.99	15.30	16.89	51.97
Girls	11.40	8.56	8.47	19.87
VI to VIII				
Total	6.71	3.46	4.22	10.93
Girls	1.63	1.28	1.38	3.01

Since sufficient additional buildings and trained teachers could not be provided to cope with the increased enrollment, there had been a rise in the teacher-pupil ratio, overcrowding of classes and the

introduction of double shifts.

The scheme of mid-day meals for children in primary schools made progress during this period. With the assistance given by international and foreign agencies about 10 million children were covered under the scheme by 1965-66 as against 4 million in 1960-1. The Central Government assisted the scheme at the rate of one-third of the expenditure.

The enrollment of girls in classes I to V during 1960-61 and the estimated state-wise figures can be seen in the Table 5.6.

The above figures are self-explanatory. The education of girls at the primary stage needed special encouragement in Bihar, Jammu and Kashmir, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh.

Similar wide variations were also found in the education of girls at the middle stage. At one end was Kerala, and at the other Orissa. The following table shows the positions of different states.

TABLE 5.7
Enrollment of Girls in the Age Group 6-11
(1960-1 & 1965-66)

State	Enrollment in classes I-V		Percentage of population in the age group 6-11 (estimated)	
	1960-61 (in millions)	1965-66	1960-61	1965-66
1	2	3	4	5
Andhra Pradesh	1.135	1.880	52.2	72.7
Assam	0.415	0.609	50.4	66.9
Bihar	0.739	1.800	24.1	54.7
Gujarat	0.723	1.101	52.9	71.9
Jammu & Kashmir	0.045	0.078	20.7	34.2
Kerala	1.110	1.233	100.0	99.7
Madras	1.280	2.200	65.9	93.1
Madhya Pradesh	0.449	1.000	22.4	43.8
Maharashtra	1.452	2.170	58.4	75.3
Mysore	0.807	1.536	55.3	88.1
Orissa	0.440	0.550	39.0	44.3
Punjab	0.463	0.786	34.7	55.2
Rajasthan	0.215	0.710	16.3	48.4
Uttar Pradesh	0.868	2.150	19.5	41.9
West Bengal	1.021	1.252	45.9	60.7
Others	0.239	0.364	- -	- -
Total	11.401	19.519	41.4	61.6

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Besides those regional disparities, urban areas in all parts of the country showed a rapid advance and there was a small gap between the number of girls and boys receiving elementary education, but in rural areas prejudice against girls' education and general poverty had impeded the progress. The case was similar among the poorer sections of the society. Only 61.6 per cent of the girls in the six to eleven age group and 16.5 per cent of the girls in the eleven to fourteen age group were expected to be under instruction in India after the completion of the Third Five Year Plan. The disparity in level of educational development between girls and boys was slightly reduced. Nearly 28.8 per cent more boys were under instruction in the age group six to eleven in 1965-66 as compared to about 40.1 per cent in 1960-61.

TABLE 5.8
Enrollment of Girls in the Age Group 11-14
(1960-1) and 1965-6)

State	Enrollment in classes VI-VIII		Percentage of population the age group 11-14 (estimated)	
	1960-61	1965-66	1960-61	1965-66
Andhra	92,000	145,000	7.6	10.4
Assam	61,000	105,000	14.6	24.5
Bihar	56,000	185,000	3.7	10.7
Gujarat	108,000	221,000	15.2	27.6
Jammu & Kashmir	11,000	16,000	9.5	13.0
Kerala	297,000	258,000	49.1	37.3
Madhya Pradesh	49,000	80,000	5.4	6.7
Madras	210,000	279,000	19.1	21.5
Maharashtra	196,000	325,000	15.3	21.2
Mysore	101,000	198,000	12.5	21.2
Orissa	12,000	34,000	2.0	5.2
Punjab	89,000	201,000	12.6	26.4
Rajasthan	28,000	75,000	4.1	9.8
Uttar Pradesh	122,000	160,000	5.1	5.9
West Bengal	134,000	372,000	11.5	29.4
Others	65,000	94,000	--	--
Total	1,631,000	2,748,000	11.3	16.5

Secondary Education

The target of additional enrollment for the age group fourteen to seventeen was 1.7 millions but in fact it was likely to be 2.3 millions. The following table showing the enrollment (in millions) makes the position clear.

TABLE 8.6

Year	Enrolment in classes IX-XI		(in millions)
	Boys	Girls	Total
1	2	3	4
1960-61	2.407	0.540	2,955
1961-62	2.782	0.643	3.425
1962-63	3.182	0.753	3.935
1963-64	3.552	0.863	4.415
1965-66 (target)	3.570	0.990	4.560
1965-66 (estimated)	4.146	1.116	5.262

It was estimated that the enrollment of girls would exceed the target by 126,000 by 1965-66 and that of boys by 576,00. Because of the shortage of staff, lack of equipment and material in certain states, high schools could not be converted into higher secondary schools. The scheme for the expansion of science education in secondary schools as an elective subject could not progress much, due to shortage of teachers.

The scheme of educational and vocational guidance was started in 1952-53 and it continued as a centrally-sponsored scheme in 1965-66. Educational and vocational guidance bureaux were set up in almost all the states.

The following table shows the enrollment of girls in this age group among different states. At this stage also Kerala led the figures, while Madhya Pradesh, Orissa and Rajasthan still had far to go.

Training of Teachers : Training facilities could not keep pace with the expansion requirements. The difficulty in making financial provisions for the teacher training programme had to be overcome. Four regional colleges of education were set up to train teachers for diversified courses and in to her subjects like science and mathematics. Some programmes to improve the qualifications of existing teachers through part-time and correspondence courses were considered. To raise the standard of teaching it was thought necessary to raise the salaries of teachers. Attempts were made in this direction. Grades of primary and secondary teachers were revised during the Third Plan period.

TABLE 8.7

**Enrollment of Girls in the Age Group 14-17
(1960-1 and 1965-6)**

State	Enrollment in classes IX-XI, XIII		Percentage of population in the age group 14-17	
	1960-61	1965-66	1960-61	1965-66
Andra Pradesh	31,000	42,000	2.7	3.5
Assam	26,000	40,000	7.0	11.5
Bihar	21,000	60,000	1.6	4.2
Gujarat	49,000	78,000	6.2	10.6

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Jammu & Kashmir	5,000	4,000	4.7	3.7
Kerala	71,000	115,000	12.6	18.7
Madhya Pradesh	18,000	15,000	2.0	1.5
Madras	67,000	126,000	6.3	11.0
Maharashtra	78,000	119,000	6.7	9.0
Mysore	37,000	61,000	4.8	7.5
Orissa	4,000	13,000	0.7	2.4
Punjab	30,000	43,000	4.7	6.6
Rajasthan	7,000	20,000	1.1	3.1
West Bengal	45,000	130,000	4.3	11.5
Uttar Pradesh	38,000	80,000	1.8	3.5
Others	23,000	44,000	- -	- -
Total	541,000	985,000	4.1	6.9

Higher Education

The number of universities increased to sixty-two in 1965-66. Science education facilities could not be improved due to lack of library facilities, building, equipment and teaching personnel. However, certain measures had been initiated to develop postgraduate departments, to improve libraries, to expand science education facilities, to provide senior and junior fellowships and to develop affiliated colleges. Correspondence courses were started at the University of Delhi on an experimental basis. During the first two years of the Plan about 4,000 scholarships were awarded to new entrants to degree and diploma courses.

The number of arts, science, professional and technical institutions also rose. Similarly, their enrollment considerably increased. The total number of girls in such institutions was 186,000 during 1960-61. It was estimated to rise to 310,000 by the end of the Third Five Year Plan period, whereas the number of boys was expected to go up to 1,870,000, more than four times that of girls, against 912,000 during 1960-61. It was estimated to rise to 310,000 by the end of the Third Five Year Plan period, whereas the number of boys was expected to go up to 1,870,000, more than four times that of girls, against 912,000 during 1960-61. But while boys' enrollment rose by 40 per cent, that of girls' rose by 67 per cent.

The National Council of Educational Research and Training was set up in September 1961 as an autonomous organization, under the Government of India, Ministry of Education. Its objectives were to promote, organize and foster research in all branches of education, to organize advanced level training, to disseminate knowledge of improved educational techniques and practice in the school system and to act as a clearing house, and with this object undertake special studies, surveys and investigations.

Other Schemes : The scheme of assistance to voluntary organizations working in the field of women's education was started during 1962-63 and continued in operation since then. Under this scheme financial assistance was given for projects of experimental of educationally significant nature, laboratories and libraries in girls secondary schools and training institutions and hostels attached to them.

In view of the importance of educating public opinion on the need and importance of girls' education, a film of girls' education entitled 'Who Seek the light' was produced by the Films Division, sponsored by the Ministry of Education.

The scheme of condensed courses for adult women was implemented by the Central Social Welfare Board. During the Third Plan period more than 600 courses were sanctioned for the instruction of adult women. Seminars on women's education were organised in different parts of the country. Central assistance was sanctioned for them. The target of establishing twenty-four polytechnics for women could not be fully attained.

A pilot survey on the attitude of women towards part-time employment was completed by the Delhi School of Social Work, Delhi and the Tata Institute of Social Sciences, Bombay during the Third Plan period.

The Education Commission of 1964

The post-independence period in India witnessed in tremendous expansion in the field of education at almost all levels. However, qualitative improvements could not keep pace with the quantitative expansion. There had been a general feeling that the approach to educational reconstruction in the post-war period had been piecemeal. Two commissions as well as several committees were appointed during this period. The reports of these committees and commissions, though useful in their way, could not produce a clear and comprehensive picture of the national system of education. In a democratic country like India, a planned integrated and flexible system of education was badly needed.

The Government of India therefore appointed an Education commission under the chairmanship of Dr. D.S. Kothari on 14 July, 1964, to consider the development of the entire educational system and to formulate a national system of education. The Resolution of the Government of India setting up the Education Commission pointed out : 'In view of the important role of education in the economic and social development of the country, in the building of a truly democratic society, in the promotion of national integration and unity, and above all, for the transformation of the individual in the endless pursuit of excellence and perfection, it is now considered imperative to survey and examine the entire field of education in order to realise within the shortest possible period a well-balanced, integrated and adequate system of national education capable of making a powerful contribution to all spheres of national life.

This Education Commission was the sixth to be appointed since the World's Education Despatch of 1854. The Indian Education Commission of 1882, under the Chairmanship of Sir William Hunter, was the first to be appointed. It made a significant contribution in regard to the education of girls, amongst other things. University and technical education were not amongst its subjects of study. The second, the Indian Universities Commission, was appointed under the Chairmanship of Mr. Raleigh in 1902. On the basis of the recommendations of this Commission, the Indian Universities Act of 1904 was passed, and this helped in raising standards. The Calcutta University Commission appointed in 1917 under the chairmanship of an eminent educationist, Sir Michael Sadler, greatly influenced the development of higher education in India in the nineteen-twenties and thirties. The fourth Commission, and the first to be appointed after independence, was the University Education Commission of 1948 under the Chairmanship of Dr. S. Radhakrishnan. The entire development of higher education in the post-independence period was greatly benefitted by the recommendations of this Commission. The Secondary Education Commission of 1952, appointed under the Chairmanship of Dr. A.E. Mudaliar,

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was another milestone in India's educational history. The programme of higher secondary and multi-purpose schools is the direct result of the recommendations of this Commission.

The Education Commission of 1964 was unique in the sense that it had comprehensive terms of reference. In addition, the approach of the Commission was truly international. Some eminent scientists and educationist from U.K., U.S.A. U.S.S.R., France and Japan were also associated with it. This Commission had to advise the Government of India on the national pattern of education and on the general principles and policies for the development of education at all stages and in all its aspects. The Commission submitted its final report on 29 June, 1966.

Report of the Education Commisstion 1964-66

The Report makes recommendations about various sectors and aspects of education. It has mainly emphasised the introduction of work experience and social service as integral part of general education; moral education and inculcation of a sense of social responsibility; vocationalisation of secondary education; the strengthening of centres of advanced study and the setting up of a small number of major universities which would aim to achieve the highest international standards; the training and quality of teachers of schools; education for agriculture and development of quality or pace-setting institutions at all stage and in all sectors.

As regards the education of girls and women the Commission point out : 'The significance of the education of girls cannot be the over-emphasised. For full development of our human resources, the improvement of homes, and for moulding the character of children during the most impressionable years of infancy, the education of women is of even greater importance than that of men..... In the struggle for freedom, India women fought side by side with men. This equal partnership will have to continue in the fight against hunger, poverty, ignorance and ill-health.'

The Commission fullyendorsed the recommendations of the National Committee on women's Education (1958-59), on special programmes for women's education, educating public opinion, popularising mixed primary schools, providing free books etc., to girls, expansion of secondary education among girls, part-time and vocational education for girls, programme of scholarships and financial assistance, setting up of special machinery in the Central Government and the states to look after girls and women's education and the employment of women teachers. The Commission paid special attention to the full-time employment of unmarried women, those women whose children reach school-going age, and part-time employment of educated housewives. Opportunities for such employments would have to be increased.

On the issue of differentiation of curriculum for boys and girls, the Education Commission endorsed the recommendations of the Committee on Differentiation of Curricula between Boys and Girls, appointed by the National council for Women's Education, under the Chairmanship of Mrs. Hansa Mehta. According to this Committe in the democratic and socialistic pattern of society which we visualise, education will be related to individual capacities, aptitudes and interests which are not strictly related to sex. There would, therefore, be no need to differentiate the curricula on the basis of sex. In the present transitional phase some differentiation will have to be made, provided that values and aptitudes essential in the long run are increasingly built up in men and women and existing differences are not perpetuated.

In the view of the Commission, while courses on home science, music and fine arts should be provided at the secondary stage on a large scale, they should not be made compulsory for girls.

Special efforts should be made to encourage girls to study mathematics or science at the secondary stage. At the higher stages women students should have free access to courses in arts, humanities, sciences and technology. However, there needs to be emphasis on technical and vocational element in such courses. Some of the professional fields where women's services are required are those of education, social work, nursing and a series of occupational fields such as nutrition, dietetics, institutional managements etc. These courses should be expanded.

The Commission suggested that one or two universities should set up research units to deal especially with women's education. These should take up follow-up studies of educated women, consider women's education from the point of view of employment opportunities available to women and ensure proper planning of women's education particularly at the stage of higher education.

The Commission was also of the view that education of women should be regarded as a major programme in education for some years to come and a bold and determined effort should be made to face the difficulties involved and to close the existing gap between the education of men and women in as short a time as possible.

Thus, we find that for the education of women in India, the Education Commission had little to suggest beyond the recommendations of the National Committee on Women's Education (1958-59), which have already been discussed earlier in this work. What is now needed is action on the part of the government and people in general?

Education Through Broadcasting

In an under-developed society it is only proper that an important role should be assigned to communication in the campaign for modernisation and economic development, and, in a country in which most people are illiterate, the role of broadcasting would be much more important than that of the printed media. From its earliest years AIR has accepted this role and several of its programmes are devised to fulfil it, whether they are intended for the general listener or for specific groups like farmers, women, students, teacher and workers.

The accent in all such programmes is on education and instruction, in the broad sense, and the purpose is to achieve through these programmes certain constructive goals of national endeavour. In the broadcasts for the general listener, the educational and instructive element is subordinated to the need to attract the listener's attention while in the programmes for specific audiences the educational approach is more direct. That is not to say that such programmes are intended to be, or are in fact, entirely didactic. Each of them includes entertainment, in some measure, but it is incidental to the main object.

The broadcast of such programmes is among the most important of AIR's activities, yet it would be impossible, in one chapter, to discuss each of them with the attention they deserve. Though they vary in content, and possess some distinctive characteristics they also share certain features in their organisation, propagation and reception. This review is confined to educational broadcasts for schools and university students and those for rural listeners.

Both radio and TV are used for such programmes. In an earlier chapter the development of TV in India was discussed in relation to its distinctive technology, programming, and other aspects. Its use for national development will be discussed in this chapter along with that of radio because the two media have to be used to complement each other and it is always necessary to determine which is most appropriate for any given objective.

School Broadcasting

Even before All India Radio came into existence there were broadcasts for schools from Bombay and Calcutta. These were occasional in character. It was only in 1937 that organised school broadcasting started in Calcutta because both the University and the Department of Education of Bengal asked for it. Even so the broadcasts were only bi-weekly and for half an hour at a time.

Meanwhile, encouraged by the interest shown by the educational authorities in Bengal, AIR wrote to a number of educationists asking for their views and suggestions for starting regular broadcasts for schools from all AIR stations. The response led AIR to believe that the time was ripe for introducing programmes for schools because the educational authorities indicated that they would cooperate in drawing up the programmes and allot funds for schools to buy radio sets.

Carried away by their enthusiasm, the AIR authorities embarked on school programmes from Delhi, Calcutta, Madras and Bombay without waiting for schools to acquire radio sets. They hoped that starting of the programmes would induce schools to buy sets. The duration of the programmes ranged from half-an-hour to one hour and the frequency from two days a week at Calcutta to six days a week at Delhi.

Pamphlets, distributed free of charge to schools which had radio sets, gave details of the broadcasts for each school term.

In retrospect, it was unwise to start such broadcasts without commitments from the educational authorities to make schools buy radio sets and to provide in their time-tables for regular listening to the programmes. In the absence of any such commitment AIR soon found that the number of schools which acquired radio sets was very small. Even today only about 60,000 out of almost 5,00,000 schools have them, and more than half the schools with sets are in Tamil Nadu.

Considering the financial condition of the majority of our schools it would be unrealistic to expect all of them to have radio sets when many of them do not even have furniture and equipment but a suitable radio set costs about Rs. 350 and it is difficult to imagine that only 60,000 schools can afford it. No one knows how many of these are actually used. The Verghese Group's Report mentions that a survey by the National Council for Educational Research No teachers have been represented on the Panels though they serve on Subjects Committees which assist the Panels in drawing up the programmes. This apart, the Panels are set up by AIR and educationists are invited to serve on them for specific periods. Educational authorities in the States and teachers in schools do not consider School Broadcasting as *their* activity; it is AIR's responsibility and they render such assistance as they have time and inclination to provide. This is the basic weakness. If, from the start, AIR had offered to place its facilities and expertise at the disposal of the States' education departments, thus making *them* responsible for planning the programmes, formulating the policy and organising the listening arrangements, the broadcasts would certainly have been far more fruitful, at least in the States which are administratively efficient.

Listening arrangement have been left entirely to the schools. Appeals are made, from time to time, to the Departments of Education to persuade schools to buy sets and to make the broadcasts an integral part of the school time-table. These are sympathetically received but the effect is negligible.

On the other hand, the TV broadcasts from Delhi, being planned with the active participation of teachers and being based on the school syllabi, replace the teachers in the sense that the same subject

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does not have to be taught by the teacher in the classroom. Scripts of broadcast are also examined by teachers before broadcast. The Delhi Directorate of Education is responsible for the planning of the broadcasts and ensures that they fit into the school time-table.

The quality of programmes on radio has been very uneven. As far back as 1938, Fielden had stated, in his report to Government, that there was a dearth of qualified speakers. Not all teachers are good broadcasters. Because of the multiplicity of languages it is not possible to ask an outstanding broadcaster in one language to broadcast in another, and the funds available for programmes in general are so inadequate that for school programmes in general are so inadequate that for school programmes only very limited amounts can be spent. Thus AIR programmes are restricted to talks and can seldom introduce topics in the form of stories or drama which have a much greater appeal. To find broadcasters and scriptwriters with an imaginative understanding of children of varying ages and types of ability, a grasp of radio technique and all the expertise in their field is not easy but even the few there are would hardly find it worthwhile to broadcast for Rs 25 per programme.

Even though posts of producers for School Broadcasts have been created at several stations, they lie vacant for years on end because educationists are not attracted either by the salaries offered by AIR or by the prospects of achieving something worthwhile through these broadcasts.

The staff of AIR concerned with planning, editing and producing the programmes belonged, for the greater part, to the Programme cadre of AIR and did not possess the intimate knowledge of schools and school children which is necessary. Also, the number of persons detailed to attend these broadcasts has always been inadequate.

Under all these handicaps it is not surprising that school broadcasts on radio never caught on. AIR was well aware of the poor response but apart from making appeals to schools and to educational authorities it had no authority to force schools to take its broadcasts. It would have been worthwhile, in the circumstances, to discontinue the programmes except in those State like Tamil Nadu and Maharashtra, in which there was some interest, and to concentrate staff and funds at those stations to see whether at least at one or two centres the scheme could not be made to work. But a Government department lacks the incentives to cut its losses. Government was reluctant to discontinue an activity when was supposed to raise the prestige of the organisation. So for more than thirty years the broadcasts have continued with few listeners. For it must be remembered that all the 60,000 sets are not being used to listen to the programmes. Random visits to schools in different parts of the country from time of time revealed that often the set was out of order or it was locked up for safety in the headmaster's office, or it was installed at the headmaster's residence, or there was no time to listen to the programmes. Only a thorough countrywide survey would reveal how many children actually listen.

But undeterred by this rather disappointing outcome of AIR's broadcasts for schools, some educationists and many non-educationists have, in the past few years, made rather tall claims for what radio and TV can do in the field of formal education. They maintain that the Indian educational system is grinding to a halt. By conventional means it has not been possible to fulfil the constitutional directive to provide free, compulsory, primary education to all our children. Nor has it been possible to reduce the drop-outs at middle-school age. There are 450 million people living in our villages and most of them are very poor. If school education was universal, even upto the primary stage the role of broadcasting would not be so important but with 70% illiteracy, it is argued, radio and TV must be

used to supplement the schools' attempt to eradicate it. Villages without schools can be served by TV sets with teaching assistants so that at least a fundamental education can be provided to children even before schools can be built in their villages. The same TV sets could be used to help adults to become literate.

It is also argued that only half the primary school teachers in India possess a high school diploma. The village TV set could be used to improve the standard of classroom teaching.

Moreover, the population explosion makes it impossible to satisfy the demand for education with existing facilities. In other countries formal school and university courses on radio and TV help students to pass high school and university examinations without attending school or college.

Radio and TV can impart vocational training, technical and agricultural skills, and so forth. They can reach the entire population, even illiterates. If the demand for trained manpower is not met, the development of India will be retarded. Examples are given of countries in which radio and TV have been used to overcome the shortage of teachers and school buildings.

There is a consensus among teachers that the percentage of knowhow absorbed by school children from electronic media outside the classroom is, in many developing societies, greater than that absorbed in the class. A good teacher on TV can achieve results comparable with those of the good teacher in the classroom but better than those of the mediocre or weak teacher.

But there are certain difficulties which have to be faced and solved in using the media for formal education. So far they have been wished away or ignored altogether.

Radio and TV sets can only be used in electrified areas. If installed in unelectrified villages it has to be ensured that battery-operate sets are available and can be maintained satisfactorily.

The technical problem of proper maintenance of the receivers and the satisfactory reception of the programme in the schools is very important and cannot be tackled after the project is started as AIR's experience shows.

The integration of the instruction to be imparted through the media and that reserved for the classroom presents great difficulty and requires much advance planning and preparation. The media can only be part of the whole system and cannot possibly assume an independent role. Experts differ as to the relative importance of the elements in the multi-media system.

It has been found in experiments elsewhere that the use of radio and TV for education has involved a re-structuring of the entire education system. It requires co-operation between media personnel and educationists. It also needs sufficient qualified personnel and above all it needs evaluation at every stage.

While radio alone has never been successfully used for formal education and has always been regarded as an aid for teachers, it has sometimes been argued that lessons on TV can replace classroom lessons. This point is vigorously disputed by many educationists.

Professor Wilbur Schramm, an acknowledged authority on instructional TV and radio, gives several reasons for being wary about accepting all the claims made for TV.

First of all it is a one-way channel and unless it is combined with correspondence, or some special arrangements in the classroom, it is impossible to tell how much a student has got out of a lesson. The student cannot control the pace of the lesson to fit his needs. This is a formidable handicap. For this reason TV lessons cannot cover all areas of learning. The development of critical or analytical

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reasoning and the encouragement of creative expression require very close interplay between student and teacher that TV can never provide.

Experience so far suggests that TV stimulates teachers more than students and can thus be of immense help in improving a teacher's performance but it has yet to be proved that it can teach without a teacher present to guide the student.

Secondly, TV lessons for schools must be made locally about particular subjects, directed at a particular class, in a particular State. It is not possible to plan TV lessons centrally for broadcast all over the country. Thus numerous production and transmitting centres would be necessary.

Thirdly, there is yet no concrete evidence of the success of educational TV for schools, whether broadcast by satellite or by conventional TV transmitters, except as an aid to teaching. In the absence of evidence of success it is highly risky to build our whole school educational system on the assumption that many millions of our children would be educated by TV. Statellites cannot be real teaching instruments in places where the post is unreliable because test papers and works sheets, have to be sent by post.

Finally, educational TV is very expensive and can never be a cost-saving device. Good programmes cost enormous sums of money and poor ones are of no use. Professor Schramm says that he has never seen a major programme introduced in a developing country without ample funds being donated by an international organisation or a donor country.

In view of these difficulties and limitations the question is how radio and TV can best serve our educational system. Radio and TV can be used to supplement the teaching in the classroom. This is what AIR's programmes have done so far. Or they can be used to teach the *basic core* of the subject while the teacher guides the students in following the broadcast and in supervising the exercises they do. The teacher in the broadcast studio provides the expertise in the subject taught and the classroom teacher discusses the subject with the students, answer their questions, and helps them in the activity of learning.

Broadcasts can also be used to *extend learning outside the school*. Where there are no schools or where children cannot go to schools or where those who have had to leave school to work can only study in non-working hours, where certain skills have to be taught, radio and TV, combined with correspondence study, or group study under the supervision of a relatively untrained teacher or leader, can be effective.

Obviously supplementary broadcasts are an extra charge and should not be considered at all in our situation where, if funds for such broadcasts were available, they would be better spent on opening more schools. Supplementary broadcasts, such as those of the BBC and NHK of Japan, are very effective in societies where every child goes to school and the educational standard is fairly good.

Broadcasting for core teaching is very expensive. The entire curriculum has to be revised, and every teacher has to be trained. Moreover, such broadcasts are economic only if millions of students can take them. With our linguistic diversity and the diversity and the differences in syllabi from State to State we cannot use such teaching except at very heavy cost.

So we are left with the use of the media for extending education to areas and for groups which we cannot serve with schools and institutions. This is a substitute, though an inferior one, for schools and

teachers and though primary, secondary and university education cannot be imparted in this way at least some education can be provided for those who would otherwise be deprived of it. Some urgent needs for informal education of this type for adults and for children can be met by the media.

For this type of educational broadcasting which would we use--radio or TV? Again, Professor Schramm, in a pamphlet entitled "TV Reconsidered", issued by the Asian Mass Communication Research and Information Centres, asks whether we have passed too quickly by radio. Radio is much cheaper and demands much less sophistication in programming and production. The technology requires much less maintenance and it is within the capability of developing countries. Even a TV set requires far more attention than a radio set. Of course, the potential of radio as a teaching medium is not so great as that of TV. There are some teaching situations in which both sound and sight are needed but research has shown that there is only a slight difference in the effectiveness of instructional radio and instructional TV. In some fields such as music, languages, and mathematics radio is better than TV. This is why Australia, for example, uses radio rather than TV to combine with correspondence study. Japan uses both as does Britain. The indications are that students who listen to radio programmes do as well as those who view TV. This raises the question whether it would not be better to take education and information to ten times as many people in the villages than to invest the money in TV since the cost ratio is ten to one.

The potential audience for radio is much larger--there are three times as many radio sets in the world as TV sets and in India the ratio is much higher. Besides, as the low-cost radio set is within the means of farmers, artisans, domestic servants and all except the very poor, students in towns and villages can listen to broadcasts in their own homes or in neighbours' homes. But it will be a generation or more before TV sets can be purchased by any save the very rich and even information education for children or adults will require an organisation in each district for the installation and maintenance of community TV sets with all the attendant uncertainties of their regular and satisfactory functioning.

For all these reasons it seems worthwhile to use radio, to the extent possible, for all such informal education. Even in the case of broadcasts intended to be heard in schools the visual element can be supplied by slides which can be sent by post to illustrate radio programmes. This would be much cheaper than broadcasting TV programmes for schools through satellites, and supplying and maintaining TV sets. Again cost-benefit studies need to be made before deciding which medium would yield the greatest benefit.

In view of the limitations of the TV medium discussed above, what is the relevance of satellite broadcasting, in so far as educational broadcasts are concerned?

INSAT-IB will broadcast a 45 minute programme daily for 340 villages to start with. As only 1½ hours are available on the Satellite, only two languages can be served. What about other languages?

As the broadcasts cover children in classes I to V they cannot possibly follow the syllabus but try to achieve two things. Firstly, it is claimed, they would make school more interesting than it is at present with the poor quality of teaching available in our primary schools. Thus children would not drop out of school as much as they do. Secondly, the broadcasts would improve the children's basic concepts and skills, promote aesthetic sensitivity, instil habits of hygiene and healthy living, bring awareness of modernisation of life and society. So we are back to the policy of "enrichment" which has failed so far to persuade teachers and educationists to respond to educational broadcasts on radio.

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However, the priority given to primary schools is correct and if the programmes are planned by the NCERT, as has been decided, they may be effective. But if the programmes are not well-planned and presented children may stop taking any interest in them after the initial novelty wears off. If listening arrangements are satisfactory and if evaluation is done systematically it is possible that programmes may be useful but the problem remains that school lessons through the satellite must necessarily be highly centralised whereas our schools need lessons planned specially for limited areas. Consider the numerous languages and dialects in which children must be taught. INSAT would have had only two channels. How can India be covered with two programmes?

Has a representative body of educationists, as distinct from the officials of the Ministry of Education, had an opportunity to examine the kind of education to be provided through the satellite and whether that is what we need? And what about the cost? Has anyone bothered to work out how much it would cost to broadcast similar lessons for the same number of schools through terrestrial transmitters which could vary the lessons according to the needs of the areas.

Assuming that all the problems of using radio and TV for education are solved, the question remains how educational broadcasting should be organised.

From the experience gained by AIR in forty four years of radio broadcasts for schools and twenty-one years of educational TV, and from the experience of other broadcasting organisations, it is quite clear that without the support of the educational authorities and the goodwill of teachers the broadcasts cannot be effective. The Ministry of Education must play an important part in laying down the policy for educational broadcasting, teachers must have a say, through their representatives, in determining the general character of the broadcasts, and the detailed planning and production of the broadcasts must be entrusted to men and women who are firmly grounded in education but are trained and equipped with a high degree of skill in radio and TV production techniques. This is difficult but it can be done.

It has not been possible for AIR and Doordarshan over the years, to obtain the effective support of the educational authorities either from the Ministry of Education at the Centre, or from the education departments in the States. Nor it is likely ever to mobilise the required degree of support as long as educational broadcasts remain under AIR's exclusive control. The direct control of the Ministry of Education would also be inappropriate for an activity in which broadcasting personnel and policies are involved. A national council for broadcasting for the country as a whole, with councils for each State, may provide the right institutional frame for the collaboration necessary between educationists and broadcasters.

The State councils must have representative of every major educational body--the department of education, professional associations of teachers, university departments, colleges of education, and of course of AIR and Doordarshan. They should not be merely advisory bodies but must be delegated certain powers. They should consider all plans for programmes for schools and for children who cannot attend school in their State. They must have the authority to determine the aims and character of each programme series. Programmes sub-committees to assist the councils should have representative of practising teachers and producers of radio and TV programmes. They must consider the training of scriptwriters and teachers who are asked to broadcast.

The councils must also decide on the time of broadcasts so that they are fitted into the school time-table and they must organise suitable valuation procedures through inspection of listening schools

during listing hours to study the impact of the broadcasts on teachers and students.

The national council for school broadcasts, with representative of AIR and Doordarshan and of the Ministry of Education, the National Council for Educational Research and Training, and of associations of teachers should lay down the policy for school broadcast for the country as a whole.

Among the most important of its functions would be the determination of priorities for the use of radio and TV, taking into account the resources available, the cost involved, and the educational goals which the country wants to attain. The council must decide whether composite programmes for children of primary classes I-V, as INSAT (1A) was planning to provide, will serve any purpose. Can we afford the "enrichment" which such broadcasts can provide while millions of children remain illiterate? If not, the council may advise that satellite TV is not suited to our needs.

It must also commission detailed cost-benefit studies to help it to decide between the various means of education available to use and between radio and TV.

The national council should also be responsible for advising on the type of radio and TV sets to be installed in schools and to take up with the Government question relating to the production and sale of such sets to make them available as cheaply as possible.

The training of staff in educational broadcasting would be one of the most important tasks before the national council. The NCERT and other institutions would have to be equipped for the purpose.

While the State councils would organise regular inspection of schools for evaluating the impact of specific lessons on students and teachers, the national council should undertake research, through appropriate bodies, on the quality of broadcasts, and the short and long term results of school broadcasts in general for the progress of education. For example, it is necessary to know how many schools, what kind of schools and in what areas in the country as a whole take school broadcasts. If in certain States the organisation of broadcasts is defective and the listening is limited the national council may advise that school broadcasts should be discontinued in those States.

Finally, the national council should be provided with adequate funds to meet the goals it sets out to achieve. In view of the vast variations between the States it might be best for the Union Government to allocate funds for school broadcasting all over the country so that they may be spent to achieve optimum results. States vary too much in their resources and efficiency.

Broadcasts for Universities

Radio talks on subjects of academic interest have been broadcast from AIR stations from the very beginning of organised broadcasting. Advisory panels were set up at Stations to suggest subjects and talkers. The talks were broadcast once a week or less frequently from some station. When in 1964, an attempt was made to assess the impact of these broadcasts on students in six cities it was found that there was little interest in them. In the absence of any organisation to plan group listening, students listened to such talks as sporadically as they listened to any other talks. University authorities obviously did not find the broadcasts sufficiently useful to make any effort to organise listening.

Meanwhile the idea of correspondence course for university students has been discussed in the past ten years and from experience in India and elsewhere it is likely that such courses will be popular provided they are organised efficiently.

Our desire to spread higher education as widely as possible among the different strata of society

combined with our need for engineers, teachers, technicians, and other skilled personnel demand an expansion of education facilities which has already strained our resources and it is not possible any more to meet the growing demand for more and more places in universities and other institutions of higher education. Obviously social justice requires that such courses should be available to all who are qualified to pursue them.

Faced by the same problem other societies have considered the ways in which radio and TV can contribute to formal and systematic study and their experience and research show that the media are effective only when supported by other modes of teaching and so organised as to evoke regular and active response from the learner. Broadcasting is a one-way medium teaching is a two-way process and the broadcast of talks cannot serve the purpose. It was in these circumstances that correspondence courses with the help of radio and TV were started.

Some of the most successful of these have provided opportunities to young people to continue their education even though they cannot attend schools or colleges either because they cannot afford to or because of geographical isolation. In Japan such courses serve 150,000 students to pass their high school examination. Radio NHK provides TV and radio programmes for every grade of the course, in every subject, according to text books approved by the Ministry of Education. Several other countries have also started such courses for high school students.

In the field of university broadcasts also Japan has given the lead. Nine universities and six junior colleges offer courses by correspondence. NHK works with them, transmitting regular broadcasts by lectures and producing text-books. In the USA, the Chicago Board of Education has, for more than a decade, offered on TV the whole curriculum of its City Junior College. Students are allotted to "Section Teachers". These not only mark exercises sent in by students but are also available during weekend telephone "conferences". About 10,000 students take advantage of this course. Post-graduate credit courses, including one leading to a diploma in industrial engineering, are offered by radio and TV in Australia in association with seminars and laboratory work at the University of New South Wales. In the Soviet Union too more than half of all higher education students are studying by correspondence.

The experiment that appears to have most excited our educationists is the Open University of Britain. Correspondence tuition has long been used in Britain for students of a variety of subjects. Such teaching allows for a two-way traffic of ideas. The printed word is far more effective than TV pictures or the spoken word on radio in posing a problem to be solved at the student's pace and time. Also, for the response from the student the printed word alone is available as also for the individual attention which his exercises and essays demand from his tutors. Radio and TV can only aid this process and the student of Britain's Open University finds that the main part of his course lies in the packaged material which he receives by post and which assigns the written work he has to do for a correspondence tutor to whom he must send it. He is also advised on the text books he must read. The material includes slides, gramophone records and apparatus for scientific experiments. In fact only about ten per cent of the whole curriculum is carried by radio and TV.

One TV and one radio programme per week supplement the written material for students of the basic university course. The shortage of air-time makes it impossible to give so many broadcasts for students of advanced courses. Since the use of the media is expensive, they are used only for those functions which they are best equipped to carry out, such as the initial presentation of a series of

topics, or highlighting and illustrating points of difficulty, or stimulating interest in the course. They can also bring the students into touch with first-rate minds. They help to reduce the "fall-out" rate which is generally high in adult education. Moreover, such broadcast, since they go out on the public broadcast channels, can be heard by anyone who is interested, even if he is not enrolled for the course, and thus help to spread knowledge and understanding to a wider audience.

TV is ten times as expensive as radio and is used mainly for subjects which demand a visual element such as scientific demonstrations but radio is just as good for subjects which demand verbal symbols. Full scale notes on the broadcast programmes are sent to the students in advance so that the programmes form an integrated part of the course.

For students who find it difficult to listen to such broadcasts at home, Study Centres have been established throughout the UK. All are equipped for direct reception and for tape-recording the programmes so that students can hear them or view them at their convenience.

At these Study Centres the students also receive tutorial services. They are situated, usually, in technical colleges or other institutions which allow the use of their libraries, laboratories and recreation facilities to the students of the correspondence course.

Even in Britain it was not easy to find time on the BBC's radio and TV channels for the broadcasts. In Japan there are special educational channels for such courses and Britain is considering a separate radio channel. There has been very close coordination between the academic staff of the Open University and the BBC producers of the radio and TV programmes. The latter, while remaining operationally a part of the BBC, have become, in effect, a part of the Open University.

The authorities of the Open University have detailed the conditions for the success of the project. Firstly, a sufficient number of persons, capable of higher education, who cannot obtain it through conventional institutions; secondly, an efficient distribution network, including postal, radio and TV distribution; thirdly, an adequate pool of qualified part-time teachers. One might add that the efficient coordination of the different media of instruction to make a coherent system is most important.

If even high industrialised countries need to use radio and TV to extend education it is argued that developing societies must do so too. But can we, in India, meet all the conditions necessary for success?

To start with, TV must be ruled out because for a long time to come only the very rich can afford TV sets. University courses cannot be followed on community TV receivers unless these are located in institutions of higher education where the student can view and listen without disturbance. Such institutions are already working to capacity and can hardly accommodate students of correspondence courses. Besides, they are concentrated in big cities and would be of no help to students in small towns and rural areas who most need the correspondence courses.

We have, therefore, to depend on radio, as AIR has done, to aid the correspondence courses of the Delhi University, the Punjab University (Chandigarh), Punjab University (Patiala) and the Kashmir and Madurai Universities. Some other universities have asked AIR for broadcasting support for their correspondence courses but so far no others have been started. AIR cannot afford this activity from its own limited resources and is asking the University Grants Commission to make funds available for such broadcasts. Universities charge approximately Rs 200 to 250 per annum from students of their correspondence courses and part of this collection should be made available to AIR.

Responsibility for planning the courses rests entirely with the universities. For example in Delhi the Correspondence School of Delhi University works out the details in committees on which AIR is represented only to provide information of the possibilities or using radio for certain purposes.

As mentioned in earlier chapter, most stations of AIR have only one broadcast channel and unless a special channel for educational broadcasts is available it is difficult to see how AIR could provide radio support for such courses from its various stations. Delhi is exceptional in having four medium-wave channels at its disposal. Even so, the time and duration of broadcasts are confined to the early morning hours on the Yuva Vani channel. Students would find the evening hours more convenient but there is not time for them.

The absence of any organised group-listening is a very serious obstacle; individual students cannot be expected to organise systematic listening.

The Verghese group examined these question in its report and felt that there were several weak points. "The lecturers are paid no more than Rs 50 per lesson by Akashvani. Of this perhaps 40% goes in typing and transport. Not all the lecturers are of high quality. Owing to shortage of tapes the lectures are not preserved and sometimes even the scripts are not maintained, with the result that the whole effort is repeated the following year at considerable cost. This would appear to be a huge waste of talent since it should be possible to engage lecturers at better fees and to build up a rich cassette library related to a standard curriculum for correspondence courses throughout the country and also to print and circulate the scripts, if necessary as supplementary reading matter."

Even without a separate channel stations could provide an hour's broadcast daily provided that the different universities in a State coordinate their courses so that a single broadcast service can serve them all. But the range of most AIR stations is limited to about 80 km or so and the really needy students in isolated areas would not be able to benefit from the broadcasts.

Above all, the capacity of the university authorities to organise correspondence courses into which broadcasts are suitably integrated is doubtful. AIR's experience with schools and educational authorities in the States is not encouraging.

A National Institute of Correspondence Courses is now being set up to advise universities on such courses and also to finance them. This may help in designing courses to use radio for maximum effect. A special educational channel would be found inescapable if correspondence courses are to proliferate.

The quality of the radio support to the given is also of importance. The Delhi experiment is not wholly reassuring on this point. If the broadcasts are dull and merely repeat the contents of text books they are not worth broadcasting. An audience survey in 1973 revealed that on the whole students' reactions are favourable.

As far as TV is concerned, its role, for many years, would be to provide adult education for teleclubs in urban and rural areas, including some measure of vocational training.

Facilities for Women Education

The growth in the number of women students in higher education since independence has been phenomenal. While women constituted only 9.3 per cent of all students in institutions of higher education on the eve of independence, the percentage of women students enrolled in all colleges and universities was 33.8 in 1994-95.

Growth in Enrollment of Women in Higher Education

The pace of growth has been particularly faster in the last two decades or so. As the data in the table below show, the number of women enrolled, per hundred men, registered a four-fold increase during the period 1950-51 to 1994-95.

TABLE 2
Women Students Per Hundred Men Students

<i>Year</i>	<i>Total Women Enrollment (000s)</i>	<i>Enrollment per Hundred Men</i>
1950-51	40	14
1994-95	2065	51

Distribution of Women's Enrollment Statewise, Stagewise and Facultywise

Statewise distribution of women's enrollment shows that, while the enrollment of women as a percentage of total enrollment has gone up in all the States, the extent of this increase has varied across the states. As in earlier years, Kerala (52.0%) continued to lead the other states in terms of women's enrolment as a percentage of total enrollment in 1994-95, followed by Goa and Punjab (50.9% each), Pondicherry (45.1%), Delhi (44.2%), Manipur (42.4%), Tamil Nadu (39.7%). Meghalaya

(39.5%), Nagaland (39.5%) and Jammu and Kashmir (39.3%). Bihar continued to remain at the bottom with women's enrolment only 18.4% of its total enrollment in 1994-95.

Stage-wise Distribution

Women's enrollment, as a percentage of total enrollment has, as Table 7.2 shows, consistently increased during the period 1985-86 to 1994-95 at all the levels of higher education--graduate, postgraduate, research and diploma/certificate.

Table 3
Percentage of Women Enrollment, Stagewise

<i>Year</i>	<i>Graduate</i>	<i>Post- Graduate</i>	<i>Research</i>	<i>Diploma/ Certificate</i>
1985-86	29.5	31.2	31.0	24.4
1994-95	33.6	35.6	38.5	26.4

A noteworthy feature of the general increase in the number of women students in higher education is the uniformity in the incidence of their enrollment at all levels of education.

Faculty-wise Distribution

The data on faculty-wise enrollment of women in 1994-95 is given below in Table 4

TABLE 7.3
Faculty-wise Women's Enrollment 1994-95

<i>Faculty</i>	<i>Enrolment</i>
Arts	11,23,157
Commerce	2,91,991
Science	4,15,000
Education	80,765
law	37,274
Engineering & Technology	24,850
Others	91,945
Total	20,64,982

While there are women students in all the faculties, the pattern of their distribution across faculties differs from the pattern that obtains for all the students in the system. A comparison that except for the Faculty of Science, where the percentage are almost the same both for all students and women students, there are four notable differences in the enrollment patterns of the two categories of students.

- (a) The percentage of women students is almost double the percentage share of all students enrolled in the Faculty of Education.

- (b) The percentage of women students is, however, markedly lower as compared to the percentage of all students in the Faculties of Law and of Engineering and Technology.
- (c) This is more or less true of commerce. As against nearly 22 percent of all students, only a little over 14 per cent of women students are enrolled for Commerce courses.
- (d) The highest concentration of women students is in the faculty of Arts, which also includes Humanities. As against 40.4 per cent of all students, 54.4 per cent women students are enrolled in various courses in Arts and Humanities.

Women's Colleges

The number of women's colleges has recorded a substantial increase during the period 1985-86 to 1994-95 as shown in the following Table 7.4:

TABLE 7.4

<i>Year</i>	<i>No. of Women's College</i>
1985-86	741
1986-87e	780
1987-88	786
1988-89	824
1989-90	851
1990-91	874
1991-92	950
1992-93	994
1993-94	1070*
1994-95	1108*

*Provisional.

Promotion of Women's Studies in Universities

The UGC's programme for promoting women's studies envisages assistance to universities for setting up centres and cells for Women's Studies. The centres/cells are required to undertake research, develop curricula and organise training and extension work in the areas of gender equity, economic self-reliance of women, girls education, population issues, issues of human rights and social exploitation. These activities are expected to contribute not only to social awareness and change but also to academic development. However, the Women's Study Centres are not expected to be like other conventional departments of a university, in that they are not required to run courses that lead to an undergraduate or a postgraduate degree.

The Standing Committee on Women's Studies reviews, advises and monitors the implementation of the scheme. A review of the programme was undertaken during the year and as a result UGC decided to continue assistance for the development of Women's studies up to the end of the 8th plan period i.e. 31.3.1997. As on 31st March, 1995, the UGC provided assistance to 33 Universities and college/ university departments for setting up Women's Studies Centres/Cells (22 and 11

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respectively). In addition, the UGC also provided assistance for the research projects concerning Women's studies.

Part-time Research Associateships for Women

The UGC annually awards 40 part-time Research Associateships to women with a view to provide an opportunity to research scholars to take up post-doctoral research independently or on project assignment basis in Science, Humanities, Social Sciences and Engineering and Technology. The number of awards given during the year 1994-95 was 39.

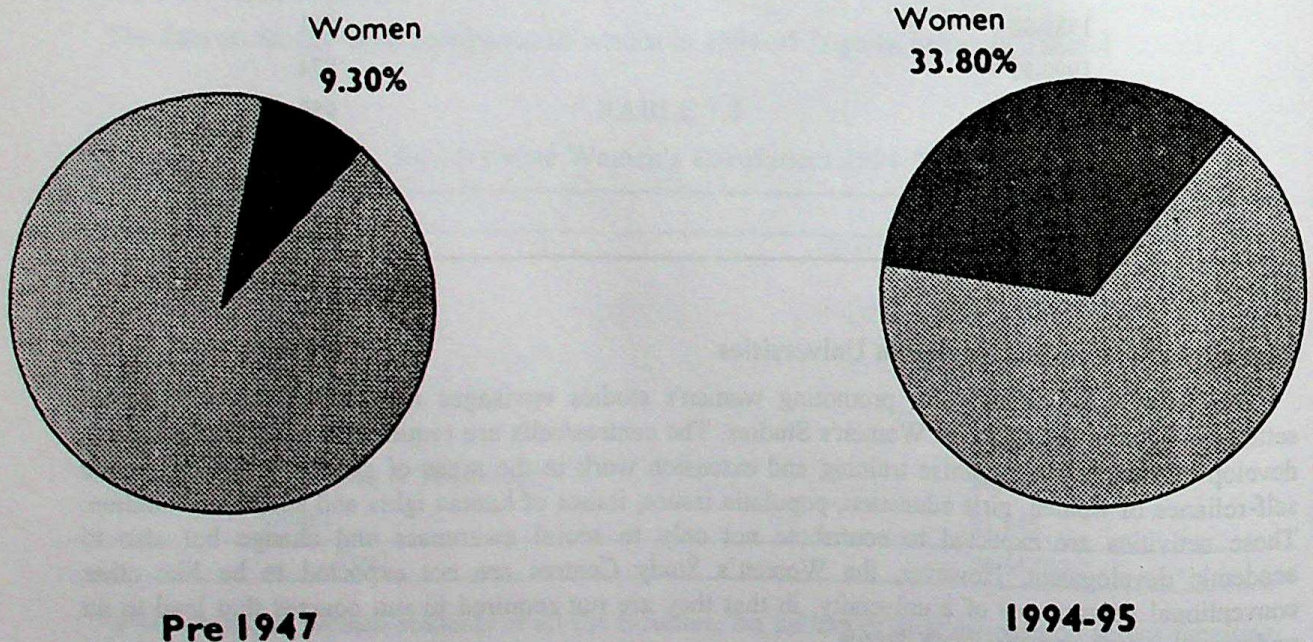
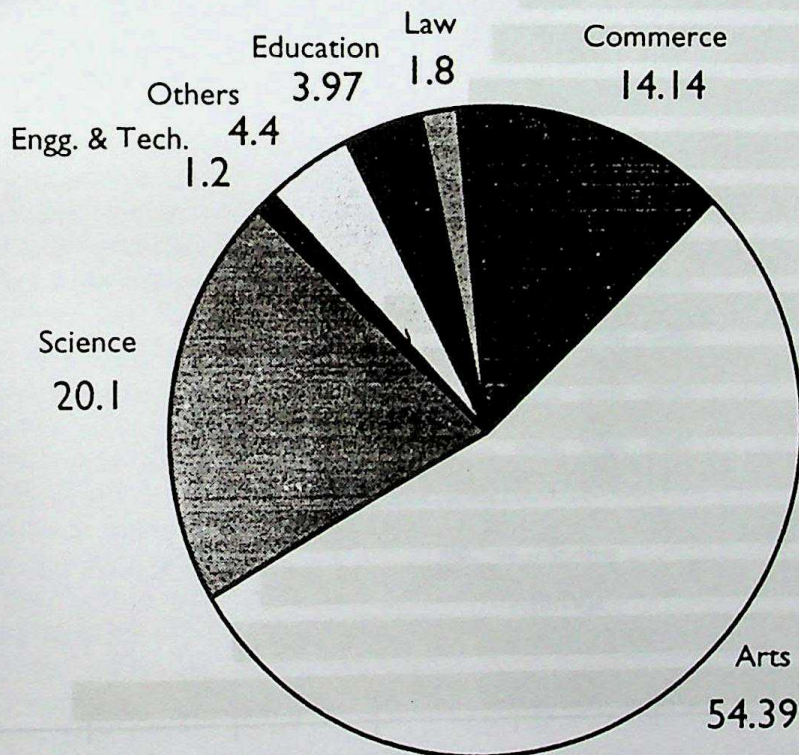
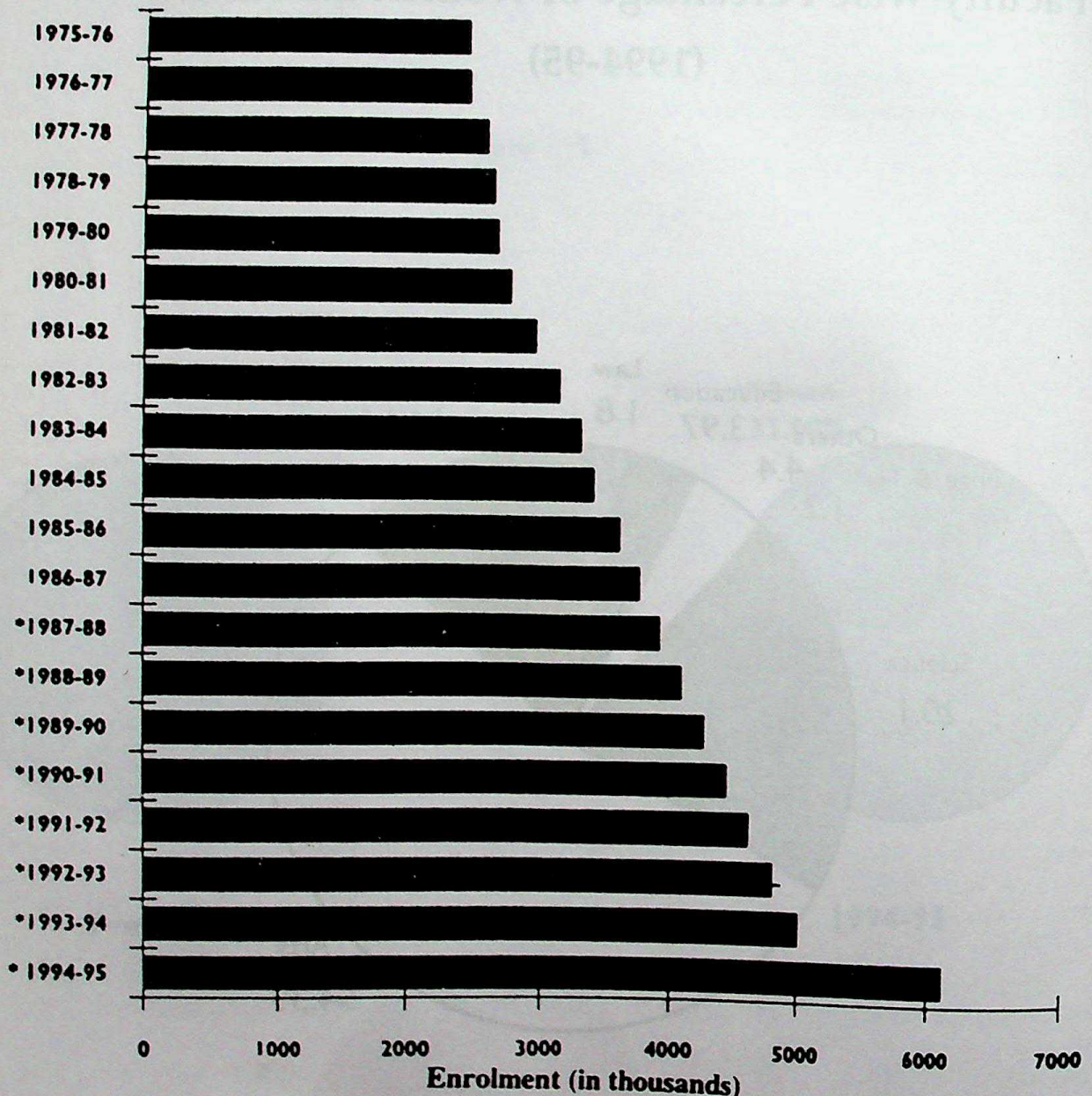
Figure 1

Figure 2
Faculty-wise Percentage of Women Enrolment
(1994-95)



Figure\ 3

All India Growth of Student Enrolment (1975-76 To 1994-95)



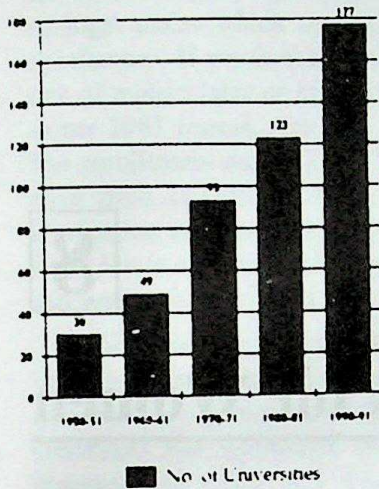


Figure 4

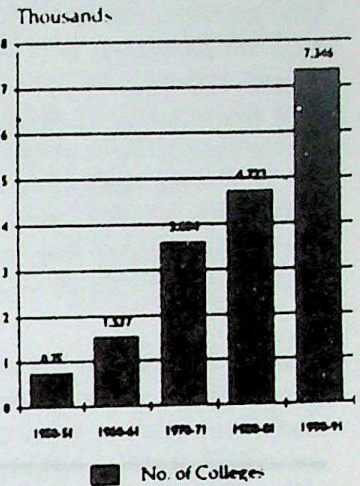


Figure 5

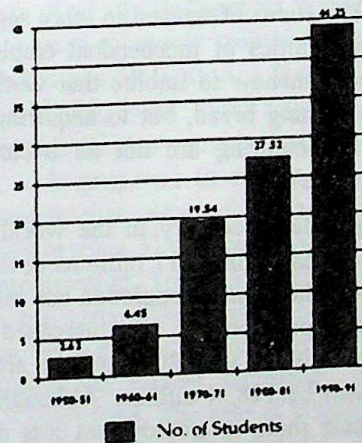


Figure 6

Careers for Women

The constitution of India guarantee's equality of opportunities in matter relating to employment and directs the centre and the state. Governments to secure equal rights for an adequate means of livelihood, equal pay for equal work and just human conditions of work for all irrespective of sex, castes, creed or religion. It also makes special provision for women to help them improving their status in society, despite concerted efforts at improving the status of women, indian women are still legging behind in many spheres. The status of women in large segments of Indian society could not be raised excepte by opening up oppotunities of independent employment for them. Women graduates leaving colleges/ universities need somehow to imbibe that work, even if it must be undertaken for necessity, is not only a means to earning bread, but to acquiring an identity. They must be made to realize that knowledge and skills, acquiring are not an irrelevant excrescence but a meaningful instrument for shaping of a worthwhile life.

India is the second largest populated country in the world. As per 1981 censuse the females population of India was 331 millions as against 117 millions at the beginning of the century i.e. 1901. Thus over 8 decades i.e. 1901-1981, the female population has increased by 213 millions or by 182%. During the same period the male population has also increased by 233 millions or by 193%. It is estimated that the females population in the year 2001 will be around 480 million. It is estimated that women labour force in 200 a.d. will be 118. 4 million. Although as per 1981 census there were 933 women as per 1000 males, yet their share in employment was only about 21%. More than 3/4th of female population live in rural areas and about 88% of them are also employed in rural sector. Another feature of the female labour is that to a large extent it is uremunerated as the same is covered with in the household or family enterprise. An ILO study has estimated that the value of unpaid house hold work constituted 25 to 39% of the total gross national product in developing countries. The seventh five year plan also acknowledges that about 54% of the rural women and 26% of urban women are engaged in marginal occupation in order to supplement the family income.

Education is one of the most important factors which determines the status of a person. The level

of education plays an important role in determining one's suitability for a job. The literacy amongst women has gone up from 0.69% in 1901 to 24.82% in 1981. During the same period the literacy rate for male has gone up from 9.83 to 46.89% during the last 80 years, the increase in literacy rate amongst males which was 37% as against 24% amongst females. Still it is considered far from satisfactory. If we further analyze the literacy rate by level of education, it is observed that literacy rate of matriculates or higher secondary among female was 12.43% as against 17.27% amongst male as per 1981 census. Amongst graduates it was still lesser i.e. 2.96% as against 4.42% amongst males. The enrolment during 1950-51 to 1984-85 of female students has shown a significant growth. It has risen from 162,000 to 43,45,000 at high/ higher secondary level and from 19,000 to 900,000 at Graduation and post graduation level. Even in faculties such as medicine and law, percentage was much lower as compared to male counterparts though there is great need of specialists in these fields and work environment is also quite congenial for women.

Under the new education policy lot of emphasis is being laid on vocationalisation of subjects. Vocational subjects are being introduced at +2 level to check the growing enrollment in general education and preparing students to take up their own jobs. Even at the under graduate level Delhi University has introduced some of the vocational subjects such as computer science, Electronics, Industrial relations and Personnel Management, Entrepreneurship development. Business data processing, family and child welfare and Secretarial practice. Tourism, office Management, retail trade. Insurance Stores Management were introduced earlier at under graduate level in Delhi University. The response of girls in these subjects has been quite encouraging.

Various universities have started separate courses for women. Delhi University (Management Faculty) provides a certificate course in office supervision for women. Graduates of minimum 19 years of age are eligible for this course. Recently Padamavati Women University has been established at Tirpathi (A.P.) to provide special course to enable women become economically independent. To provide a wide range of training opportunities for women, a National Vocational Training Institute for women (NVTI) was set up at Delhi in March, 1997. Three regional centres were also started at Bombay, Bangalore and Trivandrum. These institutes provide training in basic skills, advanced trades. During the seventh five year plan, it is proposed to set up five additional Regional Centres. In addition, the Vocational Training opportunities also exist in ITI's. In all the ITI's women can undergo training. As on Dec. 1987 about 249 women ITI's/women wings were set up with about 19,825 sanctioned seats. Besides, under Apprenticeship Training Programme there are 146 designated trades in 218 specified industries for boys and girls. The duration of training for trade apprentices varies from 6 months to 4 years depending upon the requirement of the trade. The trainees are generally inducted twice a year during Feb. March and August/September. The educational requirements vary from 5th standard to 10th standard or equivalent. The rate of stipend during the training period varies from Rs. 290, Rs. 330, Rs. 380 & Rs. 400 per month during 1st, 2nd, 3rd, and 4th year respectively depending upon the year of training. The number of women apprentices undergoing training was 5274 out of 1,39,319 as on 31st Dec, 1988.

The modern way of life and high cost of living has encouraged the women to go for jobs. The number of women registered with Employment Exchanges at the end of Dec, 1988 was 54.61 lakhs. It is an indication of their interest in salaried jobs. There has been significant growth of women registrants as we see that at the end of Dec. 1980 the number of women registered with Employment Exchanges was only 23.50 lakhs. Almost 50,000 women are placed every year in the employment through Employment

Exchanges.

One of the most striking feature of the employment market in India during the paste few decades has been the increasing number so women seeking employment in all walks of life. The age old social customs, prejudices and barriers discouraging the employment of women are getting slowly dilute. Today, we find that more and more women are taking up executive, managerial and professional jobs. Some of them have been risent to top positions of administration in public as well as private sector. As on 1st Jan, 1987 there were 339 women out of 4539 in IPS (Indian Police Service). and only 21 out of 2439 in IPS (Indian Police Service). The Government proposes to increase the representation of women in Civil services to 20% by 1990. The ratio of women employees has increased considerably from eight to thirteen percent now due to sustained and conscious efforts by the government to attract women to take civil Jobs. Indians Railways employ about 43,000 women. These few examples show that employment pattern of women is taking a radical change although slowly. Even now, a good number of women workers prefer to opt for the professional jobs such as teaching, nursing, sales, secretarial jobs as they have found these jobs more suiting to their temperament.

If we analyze the women employment in the organize sector we find that it has risen to 14% in 1981 from 11% in 1971. During this period although, there has been a decline in agricultural and allied activities and construction work yet there has been a significant increase in manufacturing, transport, communication and service sector. Similarly in the unorganized sector there has been growth from 18% in 1971 to 21% in 1981.

If we study the female work force by occupations in various sectors of economy during 1971 and 1981 census, we find that there was a significant growth in administrative, Executive and managerial worker while there was decline in manual occupations.

Teaching Occupations

“The true aim of every one who aspires to be a teacher should be to kindle minds”. Teaching is a vast field which provides empolymnt as pre-primary and primary teachers in montessori, nursery, kindergarten and basic primary schools; secondary/senior secondary school teachers; subject specialist teachers; teachers for physically handicapped; physical education teachers and college/university teachers. By and large, women teachers are mostly engaged in teaching in primary and secondary schools. However, there is a plenty of scope for starting one’s own nursery school or private coaching institute at one’s own place. Large number of private and government school exist in big and small towns where both male and female teachers are employed. The number of woemen teachers in all types of schools for general education rose to 11.00 lakhs in 1950-51.

Those who join as pre-primary of primary school teachers are generally matriculates, possessing a diploma or certificate in nursery/elementary Teaching. In high/higher secondary schools mostly trained graduates teachers are engaged who are degree holders possessing one year post graduate bachelor’s degree in education (B.Ed.). There are a good number of institutes which impart training in education. In 1985-86, about 37,400 girls as against 48,000 boys were under going training in B.Ed. Some of the Univcersities also allow teachers to appear privately for B.Ed. or M.A. degree course. The recruitment in Government managed institutions is generally through Empolymnt Exchanges. However, Public Schools or Private Schools prefer to advertise their vacancies leading newspapers for filling up their positions.

Senior Secondary Schools also employ post-graduate trained teachers popularly known as subject

specialists. They generally, teach one particular subjects to Senior Secondary classes. They are post-graduate in their subjects and possess either B.Ed or M.Ed. degree. The recruitment pattern for them is the same as opted for trained graduate teachers. As the number of women teachers available for jobs is increasing day by day, there is a tough competition in recruitment of teachers. Women teachers qualified for teaching science subjects may have better employment opportunities.

In addition there are teachers to teach vocational subjects like art, craft, music home science etc. Schools also employ one or two physical education teachers. In some schools Yoga teachers are also employed. Those who opt for these positions possess specialization in their own fields e.g. those who want to music teachers should possess a degree or diploma in music. Those who opt for drawing or art teaching should possess a degree or diploma in commercial art. There are a number of institutions which impart training in these fields. However, one should prefer to undergo training in a recognized institute.

Under new Educational policy a number of vocational subjects such as banking, stenography, interior decoration, salesmanship, advertising, insurance, library science, textile designing, etc. are being introduced at +2 level. A good demand of teachers may be expected to teach these vocational subjects in the near future.

Apart from regular teaching staff, there are other teachers who teach the physically handicapped or mentally retarded children. These teachers are senior secondary school certificate holders or graduates with training in their respective fields. Those who possess right temperamental qualities are more suited for work in school for mentally handicapped children, Bombay; Government Post-Graduate Basic Training College, Chandigarh; Training college for Teachers, Lucknow. National Institute for the Mentally Handicapped, Secunderabad (A.P.) admission to these institutes is open to matriculates who are sponsored by the employers. The selected candidates are paid monthly stipends and on completion of training are absorbed by their employers. The welfare Ministry also has got various training programmes for rehabilitating physically handicapped people and run various institutions to assist them. Several voluntary organizations run schools for physically handicapped or mentally retarded children. Generally, they employ these specialized teachers. Hence, they have very limited employment opportunities.

Universities and colleges also offer good job opportunities to the women. They may join as lecturers and rise to the level of Professor or Head of the Department. Only those whose cure 1st class/higher 2nd class in their Master's Degree with M.Phil or Ph.D. degree are, generally, employed as lecturers. The women lecturers are not only employed in colleges exclusively meant for women but also in other colleges and university faculties. Those who pursue further education in science discipline are appointed as demonstrators in laboratories.

In all the college/universities, the pay grades and service conditions approved by UGC are applicable in case of lecturers who enjoy a good running scale. UGC has also emphasized that those who are appointed as lecturers should have some published work. Published material at their credit also helps in their promotion to senior level positions such as readers, Associate professor etc.

2. Library Science

The Librarian is one who maintains books, journals and other publications in a systematic manner in a library by selecting publication to be purchased, classifying, cataloging and arranging

them. She also provides guidance to the visitors in selecting suitable reading material for study or pleasure. She is also supposed to maintain records of books and issue publications to the readers.

Libraries vary considerably in size from small collection of books administered by one person to large departmental libraries with number of branches and employing a good number of staff. Their functions and purpose are also different e.g. there are public reading libraries for general public and on the other hand we have specialized libraries designed to serve special groups of scientists engineers and technologists medical personnel etc. In a library the persons who work- may be known as librarian, deputy/assistant librarian, cataloger, reference librarian, documentation assistant/officer, counter assistant, etc. A librarian is assisted by a group of workers known as library technicians/assistants. Their duties include sorting and checking of the material coming into library, lending the books and physical maintenance of books and journals. The Counter Assistants issue books and ensure that they are in order when returned.

The scope of the librarians is wide ranging. Schools Colleges, Universities, Welfare Associations, Ministries, Public Sector organizations, Industrial/Houses, National and International Organization, Trade union organizations and important clubs etc. all have libraries as per their need. Those who aspire for a career in library science have to undergo a professional course in the subject. The certificate course of one year duration is open to matriculates. Diploma in library science is also available in Women Polytechnics. It is open to matriculates. Degree in Library Science is open to graduates. One year duration. Ph.D. in graduate degree in Library Science of one year duration. Ph. D. in Library Science is also available in the University of Delhi, Banaras Hindu University and Punjab University, Chandigarh.

Library work being of indoor nature is generally liked by women. The recruitment in the school and college libraries and other similar organizations is done through Employment Exchange. In the Government Departments and Ministries the junior level positions are filled either through Employment Exchanges or Staff Selection Commission. The Senior level positions are filled through UPSC. In the Ministries they are placed in the grade of Rs. 2200-4000 or 3000-4500. The Library Assistants are placed in the grade of Rs. 1400-2300.

3. Interpreter/Translator

The interpreters translates the spoken passages to a foreign language into another specified language. They translate orally what is said by one person into a language that can be understood by other people. There are two kinds of interpreters Simultaneous and consecutive. The Simultaneous interpreter is able to convert to second language a spoken sentence which still is being completed in the first language. He should also know the speaking habits of the person whose speech he is interpreting. Generally, in all international conference, the simultaneous interpreters are engaged.

The consecutive interpreters wait until the speaker has paused and then convert to the second language what the speaker has said to that point. The speaker must then wait until his/her interpreter has finished in order to start his/her next sentence. In this process every sentence is repeated twice, hence this method takes double the time compared to simultaneous interpretation.

An interpreter should always be placed in such a position that she can see and hear both clearly all that is going on. In international conferences they are often seated in a glass-cabin. Interpreters are generally employed in embassies, large import export agencies. Sometimes they get short term assign-

ments. They travel with the VIPs on tours to other countries.

Translators change written material from one language to another while retaining the sense and content of the material. Interpreters and translators are usually graduates possessing good knowledge of two languages. The translators are appointed to translate the material, publications, circulars, orders etc. into Hindi and other regional languages in State and Central Government Offices, Public Undertakings and major Private Organization. Staff Selection Commission also conducts a written test for selecting Hindi Translators. Subjects of Examination are :

(i) General Hindi, (ii) General English, (iii) Essay and Precise writing.

Candidates aspiring for the post of senior/Junior Hindi Translator may fulfill the following conditions :

Junior Hindi Translators

Master's Degree with English/Hindi at degree levels

Or

Bachelor's Degree with Hindi and English as main subjects plus recognized diploma/certificate in translation from Hindi to English and Vice-Versa.

Or

Two years experience of translations work in Central/State Government/Government of India Undertakings in addition to the Bachelor's Degree.

Senior Hindi Translators

1. Master's Degree in/with Hindi and English as main subject at degree level.

2. Diploma/Certificate in translation course. Diploma and Certificate courses in translation are available in most of the universities.

4. Commercial and Secretarial Practice

The Commercial and Secretarial Practice refers to white collar non-engineering jobs mainly supporting manpower employed in commercial activities, administration and other allied fields. It mainly includes the positions such as Clerk, Typist, Receptionist Private Secretary-cum-Stenographer, Stenographer, Accounts Clerk and Office Assistant.

The Central and State Government and important industrial and Business Establishment both in Private and Public Sector, require these persons. The number of women in these occupations is quite substantial and is on increase day by day. The reason for the popularity of these jobs among women are regular hours of work and mainly desk work.

Clerk --The State Public Service Commissions, Staff Selection Commission, Railway Recruitment Boards, Banking Service Recruit Boards, etc. recruit men and women for clerical jobs. The advertisements regarding competitive examinations appear in Employment News and other leading Newspapers. The Staff Selection Commission conducts Clerk's Grade examination to meet the recruitments of Central Govt. Delhi Administration, Municipal corporation, New Delhi, Municipal Committee, Delhi Electricity Supply Undertaking, etc. The educational recruitments are matriculates in the age group of 18-25 years. The Lower Division Clerk is entrusted with routine work of clerical

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nature such as registration of dak. Maintenance of various registers, indexing, recording, comparing, dispatch and preparation of various periodical statements, submission of routine and simple drafts. The job requires good typing knowledge also. The recruitment is through a written test comprising 4 parts i.e. General Intelligence, English Language, Numerical aptitude and Clerical aptitude. The questions are of objective multiple choice type and candidates are required to qualify in each of the 4 parts separately. The pay grade prescribed is Rs. 950-1500. In Clerks Grade Examination 86, conducted by SSC, the number of successful women candidates was 6623 out of 23,269, which comes to about 28.5%. Similar type of tests are also conducted by various recruiting agencies e.g. State Public Service Commissions, Banking Services Recruitment Boards, Railway Recruitment Boards, etc., to recruit persons in Clerical cadre.

Stenographer : The Stenographer takes dictation English/Hindi or other regional languages. They transcribe the notes of dictation on typewriter. They are usually attached with one of more officers/business executives. In a small office they have to attend also to clerical duties. Most of the private organizations prefer female stenographers/private secretaries.

The recruitment of stenographers in Central Government is either through UPSC or SSC. Matriculates in the age group of 18-25 years are eligible to appear in written test. The examination consists of a stenographic test at the speed of 100 and 120 w.p.m. in case of UPSC and 80 and 100 w.p.m. in case of Staff Selection Commission. In stenographer's examination 1986 conducted by Staff Selection Commission the percentage of successful women candidates was about 46 which is quite encouraging. Those who join Central Government as Stenographer through UPSC may appear in limited Departmental Examination for Section Officer held by UPSC after having five year's experience.

Receptionist/Telephone Operator : A receptionist is an inquiry Clerk who receives visitors and clients and provides them the required and necessary information. She arranges meetings and interviews with the concerned officers. The position is most suiting to those who are sociable in temperament and are willing to meet persons from different walks of life. The Receptionist should possess pleasant personality and should know etiquettes as it is the first point of contact for any visitor. The educational requirements are matriculation. However, Graduates who have good command over language are preferred. The knowledge of foreign language is considered as asset. In some small concerns, the Receptionist is also supposed to operate telephone switch board. The certificate course in Reception is available in Food Craft. Institute located at important towns in the country. Those who want to learn the operation of PBX should undergo 3 months training available in various institutes. Telephone Operators who are employed by the telephone department of the Central Government have to undergo a 10 week in service training programme in the Department.

The Department of Railways also employ a good number of women as Reservation clerks besides stenographers in their offices. The recruitment to this position is through Railway Recruitment Boards. Generally the educational requirement is a degree.

The Public Sector Undertakings also conduct objective type tests for recruitment to the clerical grade. In the Private Sector written tests are held for recruiting typists and stenographers particularly. The educational and other requirements are almost similar as prescribed in the Government.

5. Sales Occupations

Selling is complimentary to marketing which is more concerned with overall strategy. The salesman, company representative, sales engineer or professional salesmen is responsible for selling a company's

product or services to the consumers who may themselves resell or use it. Thus, it is observed that a large number of salesmen are concerned with selling of products to retailers and equally large number of them is selling accessories and components to other industrial and commercial concerns and yet others are selling plants and equipments and other services. It is a field in which not one but a range of careers is available. There are men and women selling computers, machine tools, office equipment, print space, paper, consumer's goods and services. The more technologically or scientifically complex are the products or services being sold, the more complex and lengthy is the sales process. Those who deal in selling of products which are of complicated nature are specially trained or qualified in their own fields e.g. medical representative who sells medicine should possess a degree in pharmacy or medical science.

The salesman has to build up a good working relationship with the clients. Personal Qualities play an important role in this profession. Self-confidence, persistence and initiative are a must. One should always be ready to meet new people and prepare to get on with all types of persons. Selling demands physical and mental stamina. Those who want to achieve success should know about the customer's requirements. Proper dress and ability to express oneself are also considered assets in this profession.

Women, generally, prefer to work as Counter salesgirl, door to door canvasser, demonstrator, insurance agent, market suveyor, etc. They are mostly engaged as salesgirls in departmental stores, State Government Emporia, Central cottage Industry Emporium etc. Good job opportunities are available in the pavilions set up in the exhibition.

Sellings jobs are generally on commission or commission cum-salary basis. Graduates with sociable temperament and good personality can find suitable job opportunities in this area. However, those who handle engineering goods or medicine have to acquire a skill in the respective fields. One can also specialize in the fields of retail trade at under-graduate level in the various colleges of Delhi University. Bharitya Vidya Bhavan, YMCA/YMCA and some other institutions also run evening classes for courses in marketing and salesmanship. One can also specialize in the area of marketing in MBA.

5 (A) *Insurance Agent* : Those who opt to work as Insurance Agent need not be highly qualified although good education may provide them better chance of success. The Insurance is of two types. Life and General (Fire, Accident and Theft, etc.). The broad principle of insurance is that a person pays a prescribed amount of money called premium to the Insuring Organization at regular intervals for a specific period. The protection to the person or property insured starts right from the time the first premium is paid. Most of us go for insurance to ensure a certain income after retirement or to meet the eventualities due to accident, fire or theft. The Insurance Agent is supposed to help the policy holders or his dependents as the case may be, in getting the payment of compensation after completing the required formalities. The Insurance Agent should have the knowledge of the various schemes and their applicability. It is a field which is expanding year after year. Although it is a field oriented career, still women may do it while staying at home. She may contact the clients in their offices or homes as per their convenience. It is not a full time job, but contacts pay a those who have good social circle may get good clientele.

6. Media Careers

Journalism is one of the most important instruments of the communication. It includes drafting and editing of newspapers, periodicals and magazines. It may be roughly divided into 4 main types --

(1) Newspapers. (2) magazines and Reviews. (3) Trade and Professional Journals and (4) Magazine Digests.

The persons who aspire for a career as a journalist in a newspaper, periodical, advertising agency, broadcasting station or in a government publicity organization should possess basic grasp of the language concerned and extensive vocabulary. It is considered as an ideal profession for the education Indian women. It could, if necessary, be done on part time basis from the home. However, women constitute less than 5% of the work-force in journalism, rising to 10% in the metropolitan cities.

Newspapers, magazines, periodicals etc. provide a lot of job opportunities to the journalists in various cadres. The important positions are -- Reporter, News reader, Sub editor, Make-up Sub editor, Lead Writer, Commentator, Cartoonist and Artist, Ad-Writer, freelance journalist and Correspondent.

A press reporter must study the background, analyze facts and sequences and write stories which would give a readable material for the readers. The material should be of public interest and factual. It should be precise and to the point. This profession may not suit to those who like desk work or feel shy. Those who are interested in meeting people from different walks of life, attending functions and want to work on odd hours would be able to rise in this profession. A good Press Reporter is one who makes the authentic statement and does not work under any pressure. There are many areas in reporting in which one may specialize e.g. sports, films, cultural functions, political development, art etc. Women reporters prefer to work for magazines/periodicals meant for women and children covering social events and cultural activities.

Those who prefer desk work may join as sub/Assistant Editors. Sub-Editors select, check and arrange in a suitable form the large volume of information received from the reporters. Their duties include choosing headlines and shaping stories material to fit spaces and also verifying the statements which may be doubtful. One has to work under pressure operating to strict guidelines particularly in newspapers. Women journalists prefer the editing jobs of magazines and periodicals or Sunday supplements of the newspapers.

There are innumerable educated talented and dynamic women for one person or other are unable to do a regular job. Even a part-time job may not suit to some of them for various reasons. It offers them an excellent solution in freelancing. Those who want to start their career as freelancer should possess a good English, an observant eye, willingness to learn and will to persevere in case of occasional disappointments. Advance planning is essential and time is also an important factors as there are many others in competition.

Although institutional training is not must for a career in journalism, but it helps a lot in making a success in career. Training in Journalism and mass communication is imparted by twenty five universities at Certificate, Diploma and Degree level. Some of the universities e.g. Mysore, Osmania, Calcutta and Kerala have a provision for masters' degree in journalism. Bangalore University offers B.Sc (Communication) and M.Sc (Communication) courses. Punjab Agriculture University offers a two year course in agricultural Journalism for science graduates. The Indian Institute of Mass communication, New Delhi set up in August 1965, is one of the premier institutes who imparts training in journalism. A nine month postgraduate diploma course in journalism advertising and public relations is available in this Institute. There is a five month diploma course in news agency services for persons who are not graduates. Various short term courses for professionals are also

arranged by this Institute. Jamia Mass Communications Research Centre of Jamia Millia Islamia University, New Delhi, has a post graduate course in mass communication of 2 years duration open to graduates. Bhartiya Vidhya Bhavan through its network of Institutes located in various important towns of the country also provides courses in mass communication. The duration of post-graduate diploma course is generally one year and classes are held in the evenings.

Apart from the Institutional training, the Individual must have an interest and aptitude for this vocation Journalism requires an aptitude for perceiving, comprehending and reporting major happenings and events because of their human interest or their strange and unusual flavor. This aptitude must also consist of an interest in people, a fondness for questioning and unearthing the "who, what, when, where, how and why" of events and facility for turning out a well written story, keeping in mind the on-rushing deadline which has to be met. Newspaper work often lends the way to creative writing.

The personal qualities are more important because the senior level positions demand a taxing combination of attributes; not merely the powers of expression but of observation and encyclopaedic knowledge, a gift for human relations and the moral courage to accept all the consequences of the written word, whose impact can be greater than of the sword. The journalists are not only employed in newspapers, but are also engaged by Press Council, Press Information Bureau, four News-Agencies (Press Trust of India, United News of India, Samachar Bharti and Hindustan Samachar) Registrar of Newspapers for India, Publications Division, Films Division and Directorate of Advertising and Visual Publicity, etc.

Akashvani and Doordarshan also provide good job opportunities to women as writers, set designers, researchers, special effects experts photographers. These organizations being government department, the women generally prefer to work there. All India Radio brings out four fortnightly programme journals. It also brings out a monthly journal 'India Calling' in English. In all-India Radio and Doordarshan the lower level posts are filled either through Employment Exchanges or Staff Selection Commission. Generally the vacancies of Announcers are filled by the concerned stations and Transmission executives are recruited through Staff Selection Commission. Senior level posts including Gazetted Officers of Group A & B are recruited through Central Information Service Examination conducted by UPSC on All-India basis. These posts generally include Programme Executives Asstt. Station Directors and Stations Directors.

Part-time job as Announcers and News Casters are more popular with housewives and even women students. For being an announcer one must have easily audible and deep clear voice. The correct pronunciation and good knowledge of current affairs is also a must. Those who opt for T.V. pleasing personality is a must. One has to take audition test before getting a job. There are announcers not only in English and Hindi but in regional and foreign languages also. Those who opt for foreign languages may contact Directorate of External Services, All India Radio. AIR schedule includes 17 languages. Announcers are employed by Airlines also to announce the arrival and departure of planes at the airport.

In India the number of publications is on increase in spite of Electronics Media coming up. The number of newspapers registered with the Registrar of Newspapers for India was about 23,600 as against 20,700 in 1983. The newsprint demand has increased to 5,32,000 in 1986-87 as against 4,55,000 tones in 1984-85. The number of radio stations has increased from 88 in 1985 to 94 in 1987. This growth shows that there would be a good demand for journalists in future. The number of T.V.

Transmitters will increase to 392 from the present 217 with the implementation of VIIIth Five Year Plan Scheme.

6 (A) Public Relations

The Careers in Public Relations although challenging are liked by women. Public Relations complement advertising. Where advertising created highly vocal and persuasive campaigns in the active promotion of a particular product or service, public relations is rather more of a low-key, back-room activity. The job of public relation officer is similar to that of a lawyer who presents the case to the best advantage of his client.

Public Relations requires a particular skill is knowing how to reach particular audiences through the mass media. It involves a detailed insight into the organization and operation of the press, T.V. and radio etc. It also demands technical knowledge of printing, photography, film and exhibition work etc. Personal qualities play an important role in this field. A good public relation officer should be fairly knowledgeable at least in her own field. She should possess a charming personality, pleasing manners and observe proper protocol. Sociable temperament, smartness and tactfulness are considered assets in this profession. The honesty and organizational ability pays a lot. Good rapport with media people is considered a must in this profession.

No organization-public or private-can function effectively without active cooperation of the public relation officer. In private business, they play an important role of liaison between the organization and particular departments concerned. They are considered as a bridge between the government and organization. They have to develop good relation with policy formulators or the Government. In a private concern one may start career as a liaison officer. The liaison officer has to run about a lot from pillar to post for license quota, collection of bills, getting fresh order and attending to many other similar odd jobs. In the process, they become the key person of the organization.

A PRO is also a link between establishment and the workers in a factory. As such she has to protect the interest of both the parties. The PRO plays an important role in settling issues. A good PRO should organize occasional get-together with management. PRO is also responsible for planning and preparing a wide range of printed material such as annual report, recruiting literature, house magazines and journals, promotional or scientific films and visual aids etc. She also arranges conferences including press conferences.

Besides private sector and films, PROs are also employed by various government departments and public sector undertakings. All the State Governments have fullfledged Directorates of public relations. They are responsible for keeping the public informed of progress and the development programmes in the states. They also bring out small pamphlets on various projects and development plans. They also insert from time to time such supplements in the leading newspapers of the country. There are also special information centres for all the states in the capital which are headed by the Directors of Public Relations for the States. They cater to the detailed information on State Development through the Directorates of Public Relations. Most of the Central Ministries recruit information officers who assist in highlighting the main activities of the concerned ministries. The Directorate of public relations attached to the Ministry of Defense maintains the fullfledged department to highlight the major activities in all the three forces of Defense. Similarly the Family Planning Programmes are also given a wide publicity through DAVP. The Ministry of Information and Broadcasting, through its various wings such as DAVP, Publication Division, Press Information Bureau etc. also undertakes the

public relations work of various Ministries except that of the Railways. DAVP issues big posters and sign boards carrying important messages which are displayed at the Railway Stations, Airports, Road crossing and other important public places. Various types of media including radio and TV are also used by DAVP for publicizing the important developments and information of public interest. Indian Airlines, L.I.C., Shipping Corporation of India and other public sector undertaking also employ Public Relations personnel under one name or the other.

Those who aspire for a career in public relations should have a good knowledge of journalism and advertising. Only persons with experience may find success in this line. The demand for public relations officers is increasing slowly. But with the increase a greater emphasis is being laid on professionalism.

6 (b) Advertising

Today we find advertisements in newspapers, magazines and periodicals, roadside-hoarding, cinema slides etc. Even while witnessing programmes on Radio/T.V. we see a number of advertisements catching our attention. Sometimes they are so arresting that viewers prefer them to main programmes. Advertisement have made a certain place in our life. That is why the manufacturers of consumer products care most to create awareness about their products through advertisements. The level and type of advertising may even change at different stages in a product life when it is introduced to the market. Advertising provides basic information and seeks to encourage consumers to try it. Once the product is established, the formula may change to one of brand competition and generally maintaining an image before the public. Advertising uses every available 'Medium' through which to communicate i.e. newspapers, journals, magazines, T.V. and radio, posters, packaging, cinema, exhibitions and direct mailings. Thus we find that advertising has got three aims i.e. to attract, inform and persuade.

These advertisements are prepared by advertising agencies spread all over the country. The number of advertising agencies which were 45 in 1945 has gone to 336 in 1985. During the same period their bill receipts have increased significantly from 5 crores to 580 crores. It would be of interest to note that 30% of the bill receipts is shared by 10 top most advertising agencies.

The advertising before launching an advertisement tries to find out about the proposed product/services, the existing and potential buyers and competitive products available in the market. Sometimes to gather this information they have to take assistance of some market research organization. Market research involves obtaining, collecting and analyzing data mainly statistical to provide the basis for marketing policies. The idea of the advertisement films is conceived by a visualizer. However, it is given a shape on the paper by the copy writer. It is finalized in a meeting attended by the clients and team of experts of the agency. Only after approval of the client the work on the film is started.

In fact advertisement is something which is imposed on the consumers. We do not purchase periodicals, magazines to see, an advertisement witness the programmes on radio/T.V. to see a particular advertisement. Hence, everyone in the team has to ensure that the advertisement becomes attractive and catchy to the viewers. For this purpose there should be something new in every film. Good advertisement convince the readers and listeners and viewers. Advertisements written in simple terms and in a clear direct style are most apt to convince the consumer as it is the language he understands. It has been observed that short arresting ads on T.V. and films make a lasting impact on the audience. The advertising is existing profession for young people. It pays very well and it is one of

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the hardest working professions. It is a profession with a variety of jobs.

The big advertising agencies have various departments such as account management, copy writing, art studio, media, market research and production etc. The art department advises clients suitability of the medium through which the advertisement is to be released. The production department ensures that the blocks and copy are ready for the printer at the right time. This department also assists in locating the right faces for the T.V. ads. Modeling is now closely connected with the advertising world. It is to an extent instant acting. It is more popular among smart girls. Modeling is general limited to cities like Bombay, Delhi and Calcutta where business and industry flourish. It is very fragile business because it takes time to establish yourself and when everything is at its peak, you discover that you have lost glamour and colour. Age is something which puts many a model out of work. Generally the working life span diminishes and fades at the most within a 5 years period. Modeling is purely a photographer's art to a great extent. But still good features are a must. Although make-up and light arrangements help in presentation e.g. to display fashionable dresses, good height and slim body is preferred. Models who have created sensations charge between 3 to 5 thousands for a session. Some join this profession to jump to films. Some well-known personalities in their own fields also enter the profession of modeling.

Television, as an advertising medium, has come to stay in India. The reach it offers is unmatched. Today there are 227 Transmitters spread all over India which cover more than 75% of the country in a geographical sense. The commercial services of Doordarshan started in January, 1976. The schemes of sponsored programmes was started in 1983 enabling various organizations and business houses to sponsor either programmes produced by them or imported by them or programmes produced by Doordarshan.

The job opportunities in the field of advertising are mostly in advertising agencies, private business houses and DAVP. There are various positions such as models, copy writers, coordinators, script writers, photographers, lay-out assistants, artists and production coordinators. Generally, graduates who have specialized in mass communication including advertising and public relations may find suitable opportunities. The good job opportunities are also available to those who have degree or diploma in commercial art or possess professional qualification in the field of accountancy or business management. Film and T.V. Institute of India, Poone, Xavier Institute of Communication, Bombay, Sophia Polytechnic, Bombay and National Institute of Design, Ahmedabad also offer specialized courses for those who look for a career in advertising. The recruitment in an advertising agency is generally through contract. Occasionally positions are advertised in leading dailies.

7. Fashion Designer

The Fashion Designer creates original style for men and women and children's wears. She keeps in touch with the latest trends. She must spend time in visiting textile manufacturing and sales establishments to learn of the latest fabrics in their uses and capabilities. She must know about fabrics, weave, drape qualities and strength of materials. A good understanding of textiles and their potentiality underlies much of the designer's work. She must also occasionally visit museums and art galleries to get ideas about colour and designs. She must also visit places where people assemble in great number such as sports events, business and professional meetings and picture halls, etc. to discover what the people are wearing. She should read magazines about fashion such as Femina, Elle weekly etc.

She should possess a sound knowledge of various kinds of fabrics and techniques involved in

adding designs to the fabrics, whether it be by printing, dying or weaving. The design of a particular fabric is related with its use. Recently large scale textile firms have started using automation and computer aided designs. This has made the designer directly involved in the process of production. It would not be an exaggeration to say that success or failure of a whole sale textile house depends on the ability of its designer who produces garments which are in line with a fashion trend. She also chooses and adopts designs keeping in view of the demand and economics of mass market.

A number of institutions have come up in all big cities which offer courses for dress designing. In 1980, the Department of Dress-making and Fashion Coordination was started in PV polytechnic of the SNDT University for women in Bombay. There are 40 seats. Those who have passed +2 are eligible for admission to this diploma course. Besides, YWCA which imparts a diploma in Fashion Designing and Dress making, South Delhi Polytechnic for women and the International Polytechnic for women also conducts a Certificate course of one year duration and a diploma course of 2 years duration. The most reputed institution in this area is National Institute of Fashion Technology, Indira Gandhi Stadium, IP Estate, New Delhi.

The Institute has been established by M/o Textiles, Government of India to meet the training needs of the garment industry. It prepares men and women for careers in fashion and its related fields. It has a...with a renowned Fashion Institute of Technology, USA. This Institute started a short-term course of 4 months duration of fashion designing in January, 1987. The other courses which have recently been introduced in this institute are :

Two-year Fashion Design Diploma

It was started in 1987 and there are 25 seats. The admission test is held simultaneously in Delhi, Bombay, Madras and Calcutta. Candidates who have passed +2 with 50% marks or above and have the creative ability and aptitude for fashion-related art and design art eligible for this course. The entrance test comprises art-related question and objective type questions pertaining to the fashion and apparel industry.

Apparel Merchandising and Marketing

This is a two year course introduced in 1988. It includes a course in buying, merchandising, retail operations, fashion coordination, advertising and publicity, styling, fashion and colour forecasting and international marketing etc. This course is reinforced by field trips, organization of fashion shows and fashion presentations.

This course is open to Graduates in Arts, Science, Commerce securing at least 50% marks in aggregate. Candidates with three years qualifications in textile Technology after 10+2 and or minimum three years experience after 10+2 in a garment manufacturing or export concerns are also eligible to apply. There are 30 seats.

Garment Manufacturing Technology

This is a two year course introduced in 1988. This programme includes business administration, industry and engineering concepts and techniques of production. It also covers the techniques of procuring a fabric, cutting it on assembly line stitching, finishing and packing.

This course is open to Engineering degree holder (Mech/Textile) or science graduates, with at least 50% marks in aggregate. Those who possess at least three year diploma in Textile Technology after 10+2 and/or persons with three years experience in garment manufacturing concerns as machine op-

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erators, foremen, assistant production managers etc. are also eligible to apply. This course has 25 seats.

Admission announcements appear in the national press and admission forms are made available on payment of Rs. 10. The Hostel facilities are also available for students. This Institute also provides placement services to the students. Part-time jobs and summer employment opportunities for the students may also be had through placement service.

Part-time courses—Introduction to fashion art, introduction to draping and pattern making, fashion art for fashion coordinators, fundamentals of apparel marketing and fashion merchandising are also available in this Institute. These courses are held in the evenings between February and May.

Most of the Girls who have acquired professional skill in this field may find suitable jobs in garment manufacturing concerns, Export and Fashion Houses as a designer, fashion coordinator, stylist and pattern maker. Some of them who have good resources at their command may also find avenues of employment in the film world where although income is very high yet equally uncertain. In film line, there is insecure business. With the changing time, men are also becoming dress conscious. The teenagers, today are very keen about the new pattern and styles of their dresses. This has created good employment opportunities for fashion designers.

8. Arts & Crafts

A large number of talented women artists practice arts for channelising their expressions. Some of them do it as a hobby while others take it as a career. Those who achieve skills are employed in Central and State Governments, Educational Institutions, Private advertising agencies, Colleges of art and Crafts, kala academies and other organizations concerned with the development of art. The employment opportunities are also available in All India Radio, T.V. and Cinema : Some of them who have expertise in this field may go for teaching in the concerned subjects.

For achieving skills in Art, it is not necessary that one should have institutional training on a regular basis. One may also learn it at the feet of their Gurus/Ustads. There are various well-known figures in this field who have not undergone institutional training. However, number of institutions impart training in Music, Dance, Commercial Art, Sculpture and Dramatics, etc. National School of Drama, New Delhi offers a three year diploma course in Dramatic Arts. Those who have passed +2 examination and have participated in at least 10 productions are eligible for admission. Age limits prescribed are 18-30 years. The eligible candidates are interviewed by an expert Committee who assess the aptitude and the talent of the candidates. The finally selected candidates get Rs. 450 as monthly scholarship. Another important Institute is Film and T.V. Institute of India located at Pune. They have a three year course in Motion Picture, Photography, Film Editing and Cinematography open to those who have passed Senior School Certificate Examination and possess diploma in photography/film arts. They have also 1 year 6 month diploma course in Sound Recording and Sound Engineering open to Science Graduates or Diploma holders in Electronics or Radio Engineering. There is also one year diploma in Films Division open to diploma holders in cinematography. Besides these Institutes there are various Lalit Kala and Sangeet Kala Academies which conduct various courses. National Dance School, New Delhi; Sri Ram Bhartiya Kala Kendra, New Delhi are imparting training in Dancing. Bhartiya Vidya Bhavan located at Ahmedabad, Jaipur and New Delhi impart training in Lalit Kala. The training in music and dancing is also available in various Universities. Certain minimum standards are prescribed of admission to these courses.

Talented women artists particularly in the field of dramatics may find suitable position in T.V.

serials which are becoming very popular these days. Popular faces may also find suitable job opportunities in advertising Agencies either on regular or contract basis.

9. Air Hostess

The Air Hostess looks after the passengers on board and provides them information and assistance. Her major role is to ensure that passengers feel comfortable. She gets briefing on various aspects of her flight duty before each flight. During the flight she gives safety instructions and provides reading material etc. to the passengers. She also serves meals/refreshments. She looks after the infants, the invalid and the unaccompanied children. She is also trained in First-aid and in case of need she provides first-aid to the passengers. She also ensures that no unauthorized person enters the plane.

Graduates or +2 with 3 years Diploma in Hotel Management and catering in the age group of 19-25 years are eligible. She should be eligible for Indian Passport. Certain physical standards are also laid down for this position. The minimum height should be 154.5 cms. the weight varies from 43.55 kg in proportion to height. She should possess pleasing and presentable personality, well modulate and pleasant voice, fluency in English and normal eye-sight (without glasses). She should have clear complexion and even teeth. She should be unmarried. The knowledge of first-aid and foreign language is preferred. There is 6 to 8 weeks training before joining. On completion of the training they get about Rs. 2000 per month in addition to medical assistance, annual air travel concession tickets etc. They have to fill up a bond to serve the air lines for a period of 3 years from the date of appointment.

The vacancies of Air Hostess are advertised in leading newspapers. There is also reservation for SC/ST candidates.

10. Hotel & Catering Industry

This industry offers ample job opportunities at all levels to young men and women with varying qualifications. The job opportunities are available in management, catering, cookery, house-keeping and front office to suit individual temperament. However, jobs in house keeping and front office are more suitable to young women who have a taste for up-keep, interior decoration and welcoming important persons from various walks of life. The front office is responsible for the reception of guests, making advance booking and allocating rooms. It is also responsible for keeping account of all meals and other services provided to guests and preparation of final account, reception has to maintain detailed records of rooms and guests and keep rest of the staff informed about arrival and departure of the guests. Front office has to coordinate with various departments such as house-keeping for room status, food and beverage regarding charges and groups meals, finance regarding cash, credit and billing. Reception staff is expected to have a neat appearance, tidy, friendly but firm, good at recognizing customers and welcoming them. The Reception should be courteous, polite and tactful. The house keeping department is instrumental to ensure the cleanliness and comfort of guest rooms, restaurants and other public spaces in a hotel. The house-keeper works closely with the front office and reception staff. They keep them informed about the availability of rooms. This department is responsible for maintaining stock of linen, guest supplies etc. They have to submit requisitions for room supply, furniture-renovation and replacements including maintenance of all electrical gadgets available in the guest rooms.

Young women are also engaged in other departments of the hotel such as Food and Beverage. Those who wish to join this industry should undergo a professional training. There are at present 12 institutes of Hotel Management, Catering and Nutrition in the country, running three year diploma

course. Admission to this diploma course is open to those who have passed +2 stage examination with 50% marks in aggregate. The selection is through a Joint Entrance Examination generally held in May. There are 855 seats available for boys and girls in these 12 Institutes. Examination fee is Rs. 80. There is also reservation of seats for SC/ST candidates.

Recently a Welcome-group Graduate School at Hotel Administration has been set up at Manipal (Karnataka). This Institute is affiliated to Mangalore University and provides a three year Degree Course in Hotel Administration. The admission is open to those who have passed +2 stage with minimum 50% of the aggregate marks. The admission is through an Entrance Examination followed by group discussion.

There are 12 food craft Institutes which provide certificate course in various trades such as cookery, bakery, confectionery, hotel reception and book-keeping, house keeping etc. The period of training ranges from 6 months to one year. Matriculates with 50% marks are eligible for admission.

Those who can not afford institutional training may undergo on the job training under the apprenticeship Act, 1961. Nine trades such as Cook, House-keeper, Receptionist Restaurant Hostess are covered under these programmes. The period of training ranges between one to three years and educational requirements is 10th standard. The minimum age prescribed is 16 years. During the training period, the trainees are paid stipends ranging from Rs. 290 p.m. to Rs. 380 p.m. depending upon the year of training. Some of the reputed Hotels pay higher rates of stipends to the trainees. Admission to the apprenticeship training programme is made twice a year.

Women possessing professional qualifications in the field may find wage-paid employment opportunities in starred hotels both in public and private sectors. It is expected that the hotel industry will be required to cater to 2.5 million tourists by 1989-90. In order to accommodate the tourists, the hotel industry will require 59,000 rooms. At present there are about 500 approved hotels in the public and private sectors with 32,000 rooms capacity. The Government has already approved about 200 new hotels which are likely to be completed in next 2-3 years. These hotels will provide about 15,00 rooms. Thus, it is expected that by 1980-90, about 47,000 rooms will be available for the tourists. It shows that still there will be gap of 12,000 rooms. The Government is providing incentives to this industry. Some of the State Governments have already recognized Tourism as an industry and provides certain incentives to set up the hotels. Tourism Industry also earns foreign exchange. In the year 1986-87, the foreign exchange earnings from tourism was 1780 crores as against 1460 crores in 1985-86. Recently, it has also been observed that the occupancy rate in starred hotels has increased from 85 to 90% as against 70% in 1981. In view of this it is expected that a good number of young women with professional training will be absorbed in this Industry in the near future.

11. Banking Industry

Banking sector provides good employment opportunities to educated women work force. In the Banking Industry the proportion of women in responsible positions is considered to be the highest. Banking industry employs a good number of women officers, Branches Managers, Divisional Managers and even Directors. A sizeable percentage of educated women are also employed in the clerical cadre of the banking industry. It is because of the fact that this industry provides security of job, good salary and ample promotional avenues with regular hours of working. Today, even some bank branches are run solely by women.

Banking Industry has shown tremendous growth since nationalization. During 1959-87 about

28,000 rural branches have been added. As on June, 1989 the number of bank branches was 56,300 as against 8,262 in June 1969. It is expected that number of bank branches will go up to 81,000 by December, 1990. During the same period, the advances to agriculture have increased from 2% to 16% and credit to Small Scale Industries have gone up from negligible level to 13%. There have also been a significant growth in the employment. In June, 1969 there were only 2 lakh employees. It is likely that number of employees will go 14 lakhs by Dec., 1990. This industry has provided job opportunities to young men and women with varying qualifications. There are not only clerks, stenographers and typists but a good number of officers like Agricultural officers, Personnel officers, Engineers, Legal Experts, Economists, Computer Professionals etc, are also engaged, with the changing role of banks there is diversification in the employment opportunities.

After nationalization, in June, 1969 the recruitment policy has undergone a tremendous change. The Reserve Banks of India, State Bank of India, Nationalized Banks, Cooperative Banks and Foreign Banks have their own policies and frame-work regarding recruitment of staff and officers. In Foreign Banks the recruitment is not very significant. Twenty nationalized banks are governed by the guidelines and recruitment policy issued by the Banking Division, Ministry of Finance, Government of India, for recruiting clerical staff and Probationary Officers. Fifteen Banking Services Recruitment Boards (BSRBs) have been set up to cater to the staffing needs of the nationalized banks. There is reservation of posts for SC/ST, physically handicapped and Exserviceman. They also enjoy relaxation in age limit and examination fee etc. Graduates in the age group of 18-26 years are eligible for clerical cadre. The recruitment to the clerical cadre is through a written test consisting of objective and descriptive type of questions. Those who qualify in the written test are called for interview. Finally selected candidates are placed in the grade of Rs. 520 to 1660. The Probationary Officers are recruited on All-India basis through BSRBs. The graduates in the age group of 21-28 years are eligible. The selection is made through a written examinations-objective as well as descriptive : Those who qualify in the written test are called for group discussions followed by an interview.

In the State Bank of India the recruitment to the officer's cadre is through Central Recruitment Board located at Bombay. Zonal recruitment boards recruit the staff in the clerical cadre. The pattern of examination is almost similar to BSRB's pattern. Salaries are slightly higher as compared to nationalized banks.

The recruitment of officers in Reserve Banks of India (R.B.I.) is through R.B.I. Services Board. The recruitment to the clerical cadre is through the zonal officers of R.B.I. The written examination held for recruitment to clerical cadre is similar to BSRB's pattern. Salaries in R.B.I. are higher as compared to State Bank of India of the nationalized banks.

The recruitment to technical positions in the banking industry is generally through interview along. The educational requirement for these posts is degree in the respective field with two to three years experience.

The expansion in the Banking Industry is now rural based Women generally do not accept the senior level positions on promotion if posted outside particularly at rural sites.

12. The Nurse

The nursing is as old as universe itself. "The nurse works so that others may live." Although in the earlier days it was considered a religious duty yet with the passage of time nursing has become institutionalized. The nurse helps people to prevent illness promote health prevent disability and reha-

bilitate the disabled. She provides bed-side care to patients in cases of illness. She assists physicians in examinations and operation of the patient. She maintains records of patient's treatment, temperature, pulse rate etc. She also renders first-aid. She prepares patients for the operation also.

There are the three types of nursing programmes—(i) B.Sc. Nursing (ii) General nursing and Midwifery course and (iii) Auxiliary Nursing course.

B.Sc. Nursing Course : This course is open to those who have passed +2 examination with Biology, Physics and English. The minimum age prescribed is 17 years. Duration of course is 4 years.

General Nursing & Midwife Course : This is open to those who have passed 12th class. The age requirements are 17-32 years. Duration of the course is 3 years 6 months.

Auxiliary Nurse's Course : This is open to matriculates in the age group of 16-35 years . The duration of the course is 1 year 6 months.

Post graduate in nursing also available to those who have passed B.Sc. (Nursing) : The duration of course is 2 years.

Post graduates in Nursing can also go for M.Phil Nursing of one year duration. These courses are more useful to those who want to join teaching in nursing.

A qualified nurse may start her independent practice in big towns. She may join private Nursing Homes. Generally, they are employed in Hospitals, Central Government Health Scheme, Railways and Armed Forces, Employees State Insurance Corporation etc. These days specialization in Nursing is also available, e.g. one may specialize in Neuro-Nursing, Psychiatry, Pediatric, Orthopedic, Intensive care and coronary care. Good job opportunities for qualified nurses are available in foreign countries particularly in Gulf countries.

12 (A) Medical Laboratory Technician : The job of Medical Laboratory Technician (MLT) is to perform medical tests in hospitals or clinical specialist in the diagnosis, treatment or prevention of diseases. She has to set and operate various instruments/equipments in a clinical laboratory for conducting various types of test. She is mostly engaged in the department of the Anatomy/Physiology, Cardiology, Neurology, Bio-Chemistry. Pathology and Micro-Biology.

One has to undergo the institutional training for a certificate course or a diploma in the trade. The duration of certificate course varies from one to two years. Educational requirements are matriculation. The diploma course is open to those who have passed 10th class with science (bio-group) and is available in Women's Polytechnics. The admission to diploma course is based on merit. These technicians may find employment in laboratories attached to Hospitals, Nursing Homes. Medical Research Institutions, Clinics, Pharmaceutical concerns and with private Physicians. They are also employed by Defense Medical Institutions and local bodies.

In the Central Government establishments they are generally recruited through Employment Exchanges and placed in the scale of Rs. 1400-2600. The pay grades vary from State to State. With the expansion of the medical facilities in the existing hospitals/institutions, the scope for their employment has expanded considerably. (It is expected that in the years to come qualified MLT will find suitable job opportunities as there is, of late, great emphasis on medical laboratory tests for proper diagnosis of diseases).

12 (B) Physiotherapist : Physiotherapy is healing and rehabilitation by physical means and is one

form of treatment that may be ordered by a Doctor to help the patient to recover to the proper functioning of his body and to help him return to complete normal life. She may teach an elderly woman to walk again after a fracture or an operation. The scope of physiotherapy has widened considerably since many new methods of treatment have come up.

One who aspires a career as Physiotherapist should not only undergo academic and professional qualification but should also possess personal qualities. She should have a warm understanding of people and their difficulties. She should have a sincere desire to help them patient need encouragement before they are able to make the personal effort that helps them towards recovery. She must be able to establish a friendly relationship with the patient without losing professional touch. She has to work in close cooperation with Doctors, Nurses, Radio-graphers, Occupational Therapists, Social workers and Administrative staff of the hospital.

Degree/Diploma course in Physiotherapy are available in various institutes. The duration of the courses are 3 years 6 months and 2 years respectively. These courses are open to those who have passed +2 examination with Science (Medical Group). The minimum age prescribed is 17 years. The courses start from June/July. Post-graduation in Physiotherapy of 2 years duration is available at Bombay University. Admission requirement to this course is Degree in Physiotherapy or its equivalent. Post-graduate Certificate in Rehabilitation of one year duration are available at All-India Institute of Physical Medicine and Rehabilitation, Haji Ali Park, Mahalaxmi, Bombay.

Physiotherapists in Central Government are placed in the grade of Rs. 1400-2300 and may rise to the level of Supdt. in the grade of Rs. 2375-3500. Physiotherapists can also set up their own clinics. Some of the leading manufacturers of electronic Exercisers and Physiotherapy equipment also provide loan facilities to Physiotherapists who want to set up their own rehabilitation Centre. Big hospitals, Medical Colleges, Nursing Homes and even District level Hospitals have got Physiotherapy departments where these persons are employed.

12 (C) Occupational therapist : The Occupational therapist is closely concerned with helping patients to make as full a recovery as possible from the disabilities caused by injury or disease. She helps patients by providing activities in which they can take part and which will help them on their way back to normal life. Patients are referred to the occupational therapy to understand the problems that the patients face and to think out solution that will help them to retain their independence and self-respect. This needs imagination and ingenuity as well as a fund of good will, practical ability, a strong artistic sense and a great deal of enterprise.

The occupational therapist also works with patients suffering from psychiatric disorders. Sometimes the activities these patients undertake are purely recreational but often they are designed to help them move back to a normal environment.

The Occupational Therapist needs to share many of the qualities and much of training of the Physiotherapist. She also needs to study Anatomy and Physiology, Psychology, Medicine and Surgery, and to have a full understanding of the nature of the patient disability. In addition she needs to have practical ability, to be good at making and designing things and particularly in Psychiatric work, to have artistic ability.

Those who have completed 17 years of age and have passed +2 with English, Physics, Chemistry and Biology are eligible for admission to Diploma courses in Occupational Therapy. Most of the courses start in June/July every year.

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Qualified Occupational Therapists are employed in rehabilitation deptt. of various hospitals and nursing homes.

13. Police

Risky, Hazardous yet existing—a profession considered to be a male prerogative otherwise is now attracting women into its force. Whether one is a constable, Sub-inspector or Police Officer, everyone requires an air of confidence, adventure and determination to deal effectively with those who belong to the criminal world.

The National Expert Committee on women prisoners has recommended induction of more women in police force in view of their special role in tackling women and child offenders.

The committee has also recommended that women police recruitment as well as promotion should be protected through reservation. The committee has also observed that women police have a greater potential to cool, defuse and de-escalate many situations. They are specially needed in areas where police come in contact with women so as to obviate complaints of indignity and misbehaviour towards women. There are about 3000 women in Police force all over the country which is hardly 0.4% of the entire police force. It is very much less as compared to the lady police force in other countries e.g. there are 12% in Singapore, 7% in England and Wales and 5% in U.S.

At present, women can enter directly in Police force either as constable or as an IPS officer. For women constables, the educational requirements are matriculation. The minimum height and weight prescribed are 157 cms (relaxable by 5 cms for SC/ST) & 45 Kg. Eye sight is 6/6 without glasses and the person in question should be free from colour blindness. The age limit is 18 to 25 years (relaxable to SC/ST) and pay scale prescribed is Rs. 950-1400. Eligible candidates have to appear before Selection Board. The posts are filled through Employment Exchanges. By now there is no recruitment of women at Asstt. Sub-Inspector level. At the officers level one can enter Police Force through IPS examination, apart of the Civil Service Examination, conducted by the UPSC every year. The graduates in the age group of 21-26 years are eligible to appear in this examination which consists of two parts—preliminary and main. It would be of interest to note that a woman was directly recruited to the Indian Police Service for the first time in 1972. Now there are 12 women in IPS besides 5 working as Deputy Supdt. of Police and 15 Inspectors in different States.

14 (A) Professional Management

Professional Management is one of the many fields where in women have penetrated profoundly to reach the top managerial positions. She has proved herself as one of the most effective instrument in the proper utilization of available human and material resources. Now, she has a crucial role to play in planning, production, organizing, coordinating, marketing and controlling of activities of many big and small organizations and commercial/industrial houses. In fact managers are deemed to be pillars of the organization and unless the pillars are well laid out and cemented purposefully, they will not bear fully the load of the organizational structure both present and future. It is, therefore, essential that right type of managers are selected, engaged and made competent by imparting certain training under a system of training programme. The demand for professionally trained managers is growing day by day and more and more centres imparting management education are coming up. At present there are more than forty such centres spread all over the country. These centres offer various types of management courses.

(i) Diploma Courses and

(ii) P.G. Degree Courses

The Degree course in management is called M.B.A. (Master of Business Management). It is a two year full time degree course, whereas for practicing managerial and supervisory personnel, there are facilities for part time M.B.A. Degree course. Its duration is three years. The minimum educational qualifications for admission is a graduate from any discipline/back-ground with at least 50% marks in the aggregate. Part-time candidates for M.B.A. must be sponsored by the organization where serving. Written test is following by group discussions, extempore speech context and an interview.

There are four Indian Institutes of Management Located at Ahmedabad. Bangalore, Calcutta and Lucknow. A common admission test is held at all India level sometimes in December at various centres. Usually, more that 50% candidates having engineering background are selected. Remaining selected candidates are generally from commerce, science, law economics and agriculture disciplines. The candidates may opt for the appropriate optional papers or any of the above sub-disciplines

The Diploma in management is in a particular discipline. The duration of the diploma course is generally one academic year. Some of these are listed below.

- | | |
|---|------------|
| (1) Diploma in Marketing Management (DMM) | -- 1 year |
| (2) Dip. in Personnel Management and Labour Welfare (DPMLW) | -- 1 year |
| (3) P. G. Diploma in Business Management (DBM) | -- 1 year |
| (4) P. G. Diploma in Business and Industrial management (DBIM) | -- 1 year |
| (5) Dip. in Marketing and Sales Management (MSM) | -- 1 year |
| (6) Dip. in industrial Relations and Business Management (IRBM) | -- 1 year |
| (7) Diploma in Export/Import Management | -- 1 year |
| (8) Diploma in Materials Management | -- 1 year |
| (9) Diploma in Tourism & Travel Management | -- 1 year |
| (10) National Diploma in Industrial and Factory Management (DIFM) | -- 1 year |
| (11) National Diploma in Office & Systems Management (DOM) | -- 1 year |
| (12) Diploma in Budget Management (DIPM) | -- 1 year |
| (13) Diploma in Production Mangement | -- 1 year |
| (14) Diploma in Hotel Management | -- 3 years |
| (15) Diploma in Hospital Administration | -- 1 year |

The Diploma courses are run by most university faculties of management as well as the other institutes. Punjab University of Patiala, Institute of Personnel Management and Industrial Relations, Chandigarh U.T. and Indian Institute of Computer Management, B-4, Samet, Keshav Nagar Ahmedabad-380027 conduct correspondence diploma courses in management studies. These are one year duration courses. Graduates in any stream of study are eligible for admission. Open universities

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also offer courses in management. Recently Delhi University has started Degree in business studies. This course is open to those who have passed +2 examination with at least 50% marks. The admission is done through an objective type test followed by an interview. Birla Institute of Technology and science, Pilani also offers four year integrated course in Management.

After completing Degree/Diploma courses, prominent organization induct the successful candidates as management trainees for a limited period of 6 months to 24 months. During this period scholarships ranging from Rs. 750 p.m. to Rs. 1500 are given to trainee. After completion of the stipulated training period, the management trainees are absorbed in regular management cadre of the organizations concerned. Initially they are employed as Assistant managers in their respective trades.

Women generally prefer to work in the fields of personnel management, labour welfare, advertising and general administration. Some women have been handled the financial management par excellence. Women have also proved successful entrepreneurs, managing the affair of their ventures more efficiently than their male counterparts. There is a vast field for women to display their competence and acumen in managerial skills by starting their own enterprises or by joining a paid employment in reputed concerns after their education in management techniques and skills.

14 (B) Computer Occupations

India has the distinction of being one of the forerunners in computer science among the developing countries of the world. She is passing through the age of computer revolution. Although she has a late start in this field yet her success on this front are quite impressive. Right type of atmosphere for manufacture, growth, installation and introduction of computers in various department has been provided by the Government. It is evident from the fact that computer have already started functioning in government departments and organizations like Indian Airlines, Air India, Indian Railways. Oil and Natural Gas Commission. Indian space research organization. Nuclear Power Centres, Meteorological department etc., thereby saving huge pecuniary resources and the most valuable time. It is increasing its fangs to reach other departments like education, business and finance, banking institutions etc. Thus computer is created new horizons of employment potential. Computers are now used in diagnosing illness, guiding missiles, spacecraft, coordinating air-defense and performing other jobs of daily routine.

Computers are extensively utilized in business and commerce. Banking management, stock exchange Insurance and other financial accounting work are some of the examples of the use of computers in business and commerce.

Computers are increasingly being used in travel and tourism through concerted and coordinated efforts of booking and time synchronization of passenger facilities in rail, air, sea and road travel. Use of computers has also enriched facilities in hospital services and diagnosis of patient. They have a big hand in the smooth, efficient and accurate communication through telephones and telegraph system and overseas communication. Big employment exchanges are also being computerized to provide better and efficient services to the job seekers and employers.

There are two major areas of the computer which provide good employment opportunities. They are :

- (1) Computer hardware
- (2) Computer software

Computer hardware implies designing, manufacture and maintenance of computers besides manufacture of parts and other components related to this area.

Computer software requires programming of the computer with the help of computer language such as Algol, Fortran, Cobol, Pascal, Basic etc. These languages are used for programming, feeding of data and analyzing the same for actual results.

Those who wish to computer professional, are required to acquire one of the other training certificate/Diploma/Degree for being eligible to claim a certain position.

The Indian Institutes of Technology (IITs); Banaras Hindu University (BHU) Varanasi; Indian Institute of Science (IIS), Bangalore; Birla Institute of Technology & Science (BITS) Pilani; Universities of Roorkee and Jadavpur and regional engineering colleges at Warangal, Tiruchirapali, Allahabad and various other institutes offer the B.Tech. Degree in computer science. The admission to these institutes is through the Entrance Examination, open to both-male and female candidates who have passed 12th standard with science subjects. It is a four year degree course.

The main stress in Master of Computer Application (MCA) is given on data processing in a number of environments-commercial, industrial, scientific and administrative. Those who complete the course may achieve the position of Computer Programmers who may develop well structured computer application system on their own.

This course is of three years duration. The minimum qualifications for admission to this course are :

- | | |
|--|----|
| B. Sc in Maths/Physics/Statistics/Computer Science | Or |
| B.Sc. (Application Science) | Or |
| B. Com. | Or |

Any other equivalent and relevant qualifications. Candidates who have secured 70% or above marks in the above degrees are considered for admission to (MCA). SC/ST candidates are considered with 60% marks at their credit.

Application for this course are invited in May every year and admission are over by August. The institutes and universities offering this course are : Universities to Delhi; Jawahar Lal Nehru University, New Delhi; Hyderabad; Poona; Aligarh; Baroda; Anna University, Madras; P.S.G. College of Engg. and Technology. Coimbatore; Thapar Institute of Engg. and Technology, Patiala; B.M.S. college of Bangalore; B.I.T. Ranchi; VJTI, Bombay and Regional colleges or Engineering at Tiruchirapalli and Allahabad and various other institutes.

For other graduates, there are courses which provide them training in one line data operation. Those completing this course become trained Programme Assistants and are able to work in Data entry, word processing, financial accounting and, text edition and inventory control departments. The course is of one year duration. Those who have completed their tenth class course successfully are eligible for admission to this course. This course is available at NVTI, new Delhi, CTI, Madras, RVTI Bangalore and Bombay and the ITI's at Rae Bareli, Hyderabad, Lucknow, Hissar, new Delhi, Pondicherry, Vishakhapatnam and ATI's at Kanpur and Hyderabad.

Besides, there are various institutes which offer part-time courses, private institution also offer

similar courses as narrated above. Admission to M.Tech degree in computer science is open to those who attained the B. Tech Degree in computer science. Apart from B. Tech and M. Tech degree some institutes offer B. Sc. and M.Sc. degree in computer science. The B.Sc. Degree is a three year course nad M.Sc. is two year course. Post graduates are generally taken as system programmes and analysts.

The Universities of Andhra, Gujarat, Guwahati, North Bengal (Darjeeling), Utkal, Poona, Vilabhvidyanagar, Bangalore, Kerala, Madurai, Kamraj, Osmania, Jodhpur, Kurukshetra, Punjab, Jammu, Aligarh, Hyderabad and Bhopal offer one year diploma course in computer application. There are other institutes which offer one and a half year diploma course in computer application. These institutes are generally polytechnics for men and women run both by the Government and Private organizations.

The field of computer software and hardware offers various and wide ranging positions. Some of thes are:

System Analyst

A system Analyst is a generalist who should possess strong knowledge of computer programming. She commands enough practical knowledge and experience about series of inter-related programme, estimating the time and hardware systems, resource requirements and designing, writing and debugging the program. She must have the ability to appreciate the importance of details and preparation of the feasibility study.

A System Analyst should possess a university degree preferably in computer science or engineering. She should also possess a professional training in system analysis and programming. He is expected to possess 4--6 years practical experience in the field of developing and maintaining large applications and the expert knowledge is one or more if computer languages.

Computer Programmer

A Computer Programmer has to make programmes in such a way that it produces specific output on the basis of inputs, which too are specific. She achieves her goal without compromising in any way the requirements, restrictions and other demands of the job.

Qualification for recruitment vary from organization. She should possess a graduate degree in any discipline and a diploma in computer programming from a well known institute. She should also have the knowledge of at least to computer languges.

Data Entry Operator

Data Entry Operator is a junior level computer professional. A person desiring to be data entry operator must be a matriculate in science and must have a training in data entry. The training is available in ITI's.

Console Operator

Console operator is responsible for electronic data processing. She should possess a master's degree in Computer Science/Research Operations/Statistics/Physics/Mathematics or engineering. She must also have some experience of electronic data processing, computer programming, systems design and analysis.

Women Entrepreneur

The hidden potentials of women have gradually been undergoing a change regarding their growing

sensitivity and compatibility towards their role in national growing and economic status. Women have become aware of their existence, their rights and their work situation. They are now well set on the road towards the goal. Women have recently sought to overcome various barriers. This departure from the pre-occupation of women in household activities has resulted in their taking up economic and marginal activities. They have taken, of late, an increasingly initiated action for generating economic activities. Greater emphasis on the role of women development, in general, and entrepreneurship in particular is gaining momentum at the governmental level.

Educationally, women are not lagging behind in any discipline. They possess Graduation, post-graduation and Doctoral Degree in Arts, Commerce, Science and other professional trades. They are now, the engineering graduates, diploma holders and certificate holders in engineering and non-engineering trades. Generally due to various social economic and personal reasons, they take to age paid employment in academic institutions, commercial concerns and big industrial houses. The reasons being :

1. Initial lack of confidence in their own abilities.
2. Society's lack of confidence in Women's abilities.
3. Lack of proper motivation and guidance.
4. The sense of fear in social set up that the entrepreneurship would break the traditional nucleus social system of the society.

Although the reasons enunciated above restrict most educated/women from taking to self-employment yet a good number among them are able to see through the huge potential left utilized and untapped in them. If properly motivated, they take to entrepreneurship. Entrepreneurship is no ivory tower. It is an uphill task where perseverance and determination and the will to succeed are tested to the utmost.

The women entrepreneur should possess the following qualities to become self-employed :

1. Capacity to work hard
2. Imagination
3. Foresight
4. Sense of responsibility
5. Sociable temperament
6. Capacity to take independent decisions.
7. Risk taking
8. Managerial skill
9. Leadership qualities
10. Business acumen.

Realizing the potentials of vast entrepreneurial talents among women which could be harnessed to create employment opportunities, the small industries development organization through its net-work of small industries service institutes in the country, has planned to develop those talents among the weaker sections of the society and women. These organization have been motivating women entrepreneurs to take up small industries of their own. Technical assistance and guidance is being provided to them on types of products and activities which could be taken up by them for gainful self-

employment.

Special incentives have been initiated to help women take up entrepreneurial careers. These include preference in allotment of land, sheds in industrial estates, granting of loan, subsidy and stipend etc. The rate of interest is 9 to 12.5% p.a. on IDBI loans to women as against 12.5 to 15% of the normal interest rate IDBI (Industrial Development Bank of India) has also some special programmes for women entrepreneurs. Several Financial Corporations in Different states have special schemes for women entrepreneurs.

In addition, the entrepreneurial development training programmes, are being conducted exclusively for women entrepreneurs normally covering a duration of one month. The entrepreneurial development programme amongst women is a full-time training course. The training courses cover theoretical and practical aspects. These courses are product/process oriented. The participants are groomed in the production of marketable goods and services together with their techno-managerial aspects. The demonstration and training in the technical aspects are also covered. In selecting the product/process for the training course, the local needs and skills are the main criteria. During the period of training, the trainees are given a stipend of Rs. 100 per trainee per month.

The training programmes help in raising the achievement and motivation level of entrepreneurs to a higher degree. In order to maximize the benefits of the training programmes adequate post training support is provided to the trainee women to set-up successfully their industrial ventures. SISI's draw up and conduct their entrepreneurial development programmes for women with the active cooperation of State level agencies like Directorate of Industries, State Financial Corporation, State Small Industrial Corporations, Banks etc. so that the much required post training support is made available without much constraint.

There are hundreds of industries which women entrepreneurs may be able to set up easily. There are about 860 items exclusively meant for small scale industries. Lots of immunities for the prospective women entrepreneurs are granted to help establish them successfully. Special subsidy of 15% in fixed assets and marketing-buying of finished goods etc. are also provided as facilities.

In view of the above facilities, grants and subsidies etc., women who are interested in self-employment ventures and also want to generate employment for many more hands, may come forward to avail of the opportunities of loans, land etc. The society needs to provide an environment under which women can enjoy individual identity rather than act as proxies to the men, all the time. Some of the social customs and norms related to the property ownership, before and after marriage, require readjustment to facilitate leading and acquisition of assets.

We have covered the various fields which provide ample employment opportunities to the women. However, they are also participating in other economic activities. We find number of women employed as Tourist Guides, Decorators, Performing Artists, Commercial Artists, Beauticians, Physicians, Social Workers, Assemblers in Electronic Industry and Watch Industry etc. They are also working as Agriculture, Scientists, Doctors, Scientists, Chartered and Cost Accountants, Pilots, Engineers, Lawyers, Photographers, Editors, Press reporters, and Company Secretaries etc. In the field of self employment they are also not lagging behind. Not only they are managing the garment and electronics industry, Knitted garments but they have boldly ventured into other areas. This shows that women are no more confined to traditional areas of employment. They are now excelling in the fields which were by now considered the male dominated areas.

Educated Women Power

It is needless to mention that the main plank of the present study is the educated female group. It is imperative that the respondents of the present study must have passed through a number of stages in their educational career, some of them being smooth and the others not so without problems and difficulties. In any study of this type where respondents educational career becomes the primary focus of enquiry, it is logical to seek information with regard to the areas such as motivating factors, problems and difficulties encountered, ways of overcoming the various hurdles, etc. in case of the respondents of the study. Viewed in this context, the respondents of the present study were asked to provide information on aspects, namely (a) The last degree obtained in their educational career, (b) The chief motivations and considerations behind obtaining the degree, (c) the problems and difficulties encountered by them while going through the course of study, (d) The ways of overcoming such problems and difficulties (e) Job potentiality of the educational degree obtained, and (f) the general attitude of their family members towards their pursuing the courses of studies.

The information collected on the aspects mentioned above have been analyzed in this section.

The Present Status of Respondents' Education

The respondents were asked to mention the last degree which they obtained at the time of the present survey. The information pertaining this aspect has been presented in the Table 9.1, from which it transpires that the highest percentage (36.00%) of respondents has informed that they have obtained the post-graduation degree, followed by the respondents having obtained graduation degree (35.67%), Intermediate (28.33%) levels of education, as their last degree in their educational pursuit till the time they were contacted for his study.

Thus, it can be inferred that the respondents having obtained graduation and higher level of education have out numbered those who possess the level of education below graduation.

Chief Consideration Behind Respondents Educational Pursuit

As regards the analysis of the chief consideration behind obtaining the educational degree, as in apparent in the Table No. 9.2, a greater percentage (27%) of respondents informs that the chief

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consideration behind their obtaining the degree has been that of 'Fulfilment of personal expectations' followed by the respondents whose chief consideration has been that of 'Fulfilment of parent/guardian's expectations' (25%), 'Good prospects of earning money' (26.67%) and 'Continuing family's educational tradition' (21.33%) in this sequential order.

As regards the educational level of such respondents, the table reveals that among the 'Highly Educated' respondents, the majority (31%) has kept before them, while pursuing their educational career, the chief consideration, titled as 'Fulfilment of personal expectations', followed by the respondents in this category having chief considerations such as 'Fulfilment of parents/guardians expectations' (25%), 'Good prospects of earning money' (17%), and 'Continuing family's educational tradition' (27%) in this sequential order.

Of the 'Moderately Educated' respondents, the dominant considerations behind obtaining the degree in majority of the cases (30%) has been the 'Good prospects of earning money', followed by the considerations, in rest of the cases 'Fulfilment of personal expectations' (27%), 'Continuing family's educational tradition' (22%) and 'fulfilment of parents/guardians expectations' (21.00%), in this order.

The chief consideration titled 'Good prospects of earning money' (33%) has been reported by the largest single group among the 'Lowly educated' respondents. The other considerations mentioned by rest of the respondents in this category behind obtaining the degree has been termed as 'Fulfilment of personal expectations' (23%), 'Fulfilment of parents/guardians expectations' (29%), and 'Continuing family's educational traditions' (15%), in this descending order.

It can be very well concluded that while in the case of the 'Highly Educated' respondents the chief consideration has been titled as 'Fulfilment of personal expectations', the consideration titled as 'Good prospects of earning money' has been mentioned by majority of the respondent placed in 'Moderately educated' and 'Lowly Educated' categories.

Persons Motivating Respondents' Educational Pursuits

It needs hardly be emphasized that the educational career is facilitated by the encouragement and support of persons who in some way or the other, are closely related to the person concerned. Thus, an attempt was made in this study to identify such persons encouraging and supporting the respondents in their educational pursuits.

The data collected in this regard have been given in the Table 9.3, which reveals that among the 'persons', 'parents/inlaws', found to be encouraging and motivating the respondents constitutes a greater percentage (27%), followed by the categories of respondents encouraged and motivated by husband (18%), self (17.67%), Teachers (16%), Friends (12.67%), Relatives (5.33%), and Neighbours (3%), in this order.

Analyzing the data in relation to the respondents' educational status, it can be inferred that in the category of 'Highly Educated' respondent's parents, self, friends, teachers, relatives, husband were the persons found encouraging and motivating the respondents in their educational career, in this descending order, whereas among the 'Moderately Educated' respondents persons found encouraging and motivating, have been as under. Husband, Parents/Inlaws, self, Teachers, Friends, Neighbours and relatives, in this sequential order.

The set of persons encouraging and motivating in the category of 'Lowly educated' respondents

have been reported to be as under, Parents/Inlaws, Teachers, Husband, Friends, Self, and Neighbours in this descending order.

Conclusively, it can be stated that the Parents/Inlaws together with the Husband are the main set of persons who are found to be encouraging and motivating the respondents in their educational attainments.

Problems and Difficulties in Respondents' Educational Pursuits

Respondents were asked to express their opinion about the problems and difficulties faced by them while pursuing the courses of study. The information collected in this regard has been presented in the Table 9.4, which reveals that in response to the question : Did you face any problem in your educational pursuits?, a majority of the respondents (69%) has been found to be 'positive'. The rest of the respondents (31%) have not faced any problem at all in their studies. Among the respondents who have faced difficulties/problems, a greater percentage (76.34%) has faced the problem termed as 'Financial difficulties', followed by the problems titled 'Resistance from family members' (39.13%), 'Lack of space in the house to pursue independent studies' (29.96%), 'Non co-operative attitude of Teachers' (15.45%), 'Eve-teasing' (13.04%), 'Harassment by co-students' (9.17%) and 'Lack of personal interest' (6.77%), in this sequential order.

Analyzing the data in relation to the respondents' educational status, it can be inferred from the table that among the 'Highly Educated' respondents a majority of respondents has been faced with the problem termed as 'Financial difficulties' (69.49%), followed by the problems titled 'Resistance from family members' (83.05%), 'Eve-teasing' (20.33%), 'Lack of space in house to pursue independent study' (11.86%), 'Non co-operative attitude of Teachers' (11.86%) and 'Lack of personal interest' (6.77%), in this sequential order.

Among the 'Moderately Educated' respondents, a majority of percentage has been faced with 'Financial difficulties' (77.14%), followed by the problem titled 'Lack of space in the house to pursue independent study' (50%), 'Non co-operative attitude of Teachers' (35.71%), 'Resistance from family members' (32.85%), 'Eve-teasing' (14.28%), 'Harassment by co-students' (12.85%) and 'Lack of personal interest' (2.85%), faced by, the rest of the respondents in this educational category.

The problem, entitled 'Financial difficulties' (80.76%) has been faced by the majority of the 'Lowly Educated' respondents. The other problems faced by the respondents of this category have been as under: 'Lack of space in the house to pursue independent study' (25.64%), 'Lack of personal interest' (14.10%), 'Harassment by co-students' (12.82%), 'Resistance from family members' (11.53%) and 'Eve-teasing' (6.41%), in this descending order.

It can be inferred from this table that while a majority of the 'Lowly Educated' and 'Moderately Educated' respondents in this order have faced 'Financial difficulties' in pursuing their educational career, the 'Highly Educated' respondents in most cases encounter the problem, termed as 'Resistance from family members' in pursuing their higher courses of studies. Thus, the hypothesis of the study that a majority of the female youth placed in the 'Lowly educated' and 'Moderately Educated' groups of respondents more than the respondents belonging to the 'Highly Educated' group, faces 'Financial difficulties' in continuing their educational career, is established.

Ways and Means Adopted by Respondents' Overcoming their Problems

The respondents were asked to furnish information with regard to the ways and means adopted by

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them to overcome the difficulties/problems faced in their educational pursuit. The Table 9.5, containing information on this issue, reveals that a greater percentage (51.69) of respondents overcomes the difficulties with the help of their 'Parents/Inlaws, followed by the sources entitled, 'Help of siblings' (20.77%), 'Self efforts' (tuitions) (19.80), 'Help of the Teachers' (7.72%), 'Avoid situations' (6.76%) and 'Help of tutors' (0.96%), in this descending order.

Analyzing the data in relation to respondents' educational status, it can be inferred that in the category of 'Highly Educated' respondents a sizeable percentage of respondents (52.54%) falls in the category obtaining the 'Help of parents/inlaws, followed by the respondents who take 'Help of siblings' (25.42%), who overcome the problems through 'Self efforts' (tuitions) (15.25%), 'Help of Teachers' (8.47%) and 'Avoiding situations' (1.69%), in this descending order.

Among the 'Moderately Educated' respondents a majority percentage (52.85%) has reported that they take the 'Help of Parents/Inlaws, followed by the respondents who overcome the difficulties/problems by 'Self efforts' (tuitions) (28.57%), 'Avoiding situations' (18.57%), 'Help of siblings' (14.28%), and 'Help of Teachers' (2.85%), in this descending order.

In the category of 'Lowly Educated' respondents, a greater percentage of respondents (50.00%) overcomes the problems with the 'Help of Parents/Inlaws, followed by the respondents who overcome the problems with 'help of siblings' (23.07%), 'Self efforts' (tuitions) (15.38%), 'Help of teachers' (11.53%) and 'Help of Tutors' (2.56%), in this descending order.

Given the above said analysis, it can be inferred that irrespective of the educational level, help of parents/inlaws has been the most commonly sought ways and means to overcome the various problems/difficulties faced by the respondents in their educational career.

Job Potential of Respondents' Educational Attainment

Assuming that the respondents' with higher educational level will consider their educational attainments to be well enough to procure job for themselves than the respondents belonging to relatively lower educational level, the information with regard to the job potential of respondents educational pursuits has been obtained in this research. The Table 9.6 gives the trend of opinion in this regard.

The table shows that a major percentage of respondents (56%) opine that after attaining the educational qualifications they feel 'well equipped' to take up a job. The remaining percentage (44.00%) holds a contrary opinion in this regard. In other words, they do not find themselves educationally well equipped and qualified to take up a job.

The data in relation to respondents' educational status show that of the 'Highly Educated' respondents, 78% feel well equipped and qualified to take up a job, whereas 53% among 'Moderately Educated' respondents and 37% among 'Lowly Educated' respondents consider themselves well equipped and qualified to take up a job. It means that 22% among the 'Highly Educated', 47% among the 'Moderately Educated,' and 63% among the 'Lowly Educated' respondents do not consider their present educational attainment enough and equipped to secure a job of their choice and preference.

Thus, it can be inferred that education is a significant variable in consideration of one's educational attainment to be potential in seeking a job of their choice and preference.

Attitude of Family Members Towards Respondents' Educational Pursuits

Gainful employment and several other specialist services as required by society these days put an increasing emphasis on formal education to be acquired by both males and females. Understandably so, the function of education in the broadest sense of the term is to help advancement of knowledge together with enhancing the academic and technical capabilities in the person concerned in order to be gainfully employed. As indicated above, acquisition of knowledge and skills through learning is not an end in itself. It is a means whereby the socio-economic and cultural functions, in order to enhance the functioning of a particular society, are achieved and materialized. Thus education generates a favourable condition on which depends the advancement of the society.

It is by now an established fact that besides the above factors, the attitude of family members towards the education of the incumbents of the family, particularly the female plays a significant role in promotion of educational interests in the family.

Thus, in order to study the attitude of family member towards the educational career of the respondents, the question that was put runs as follows : What was the attitude of your family members towards your educational career ? Stemming from the premise that the attitude of family member towards educational career of the respondents will be greatly conditioned by the maximum educational level existing in the family, an attempt has been made to analyze the attitude of family members towards their educational career vis-a-vis the maximum level of education existing in the family. The Table 9.7 provides that the single largest group (43.66%) of respondents has been constituted by those who are of the opinion that the attitude of family members towards their educational career has been 'Favourable', followed by the respondents (40%) according to whom the attitude of family members towards their educational career has been 'Unfavourable'. The rest of the respondents (16.67%) has not been able to express any opinion in this regard and thus their answer have been categorized as can't say.

As regards the level of maximum education in the family and its impact on the family members' attitude towards the educational career of respondents, the table reveals that in the families where the level of the maximum education has been that of the primary standard, the attitude termed as 'Unfavourable' constitutes the largest share (55%) while in the cases of 35% of respondents the attitude has been 'Favourable'. Ten per cent of the respondents are found to be abstaining from expressing any opinion in this regard. Among the families where the level of maximum education has been 'Junior High School' the attitude in majority of the cases (48.33%) has been 'Unfavourable', followed by the respondents (41.66%) in whose cases the attitude has been reported to be 'Favourable' while 10% of the respondents are found to be abstaining from giving any opinion.

Among the families having 'High School' as the maximum level of education, in majority of the cases (50.49%) the attitude has been 'Unfavourable', followed by the respondents (38.61%) informing as 'Favourable' attitude in their cases while 10.89% of the respondents preferring to abstain from, offering any definite view.

Among the families having 'Intermediate' as the maximum level of education, in majority of the cases (45.58%), their attitude has been found to be 'Favourable' while in the cases of 27.94% the attitude has been found to be 'Unfavourable' and (26.47%), of the respondents attitude fall in the category of 'Can't say'. Regarding the families having 'Graduation' as the maximum level of education the attitude termed as 'Favourable' constitutes the largest share (37.93%), followed by 'Unfavourable' attitude in the cases of (27.58%) of the respondents. It is interesting to note, however, that quite a

sizeable percentage (34.48) of the respondents in this category does not hold any definite view on this issue.

Among the families having 'Post Graduation' as the maximum level of education the majority consists of those respondents (77.27%) whose family members attitude has been 'Favourable', followed by the respondents (9.09%) who have viewed the attitude as 'Unfavourable', while 13.63% or respondents, the next largest group, are found to be abstaining from giving any considered opinion on this issue.

To sum up, it has been found that the attitude of family members possessed with the higher level of education has mostly been 'Favourable' towards educational pursuits, clearly indicating that advancement of educational career and creating academic interest among family members in general and female youth in particular, to a large extent, depend on the educational background of the family which plays a decisive role in the development of individual's personality.

Chief Consideration Behind Respondents' Becoming Job--Seekers

Assuming that respondents with different educational background will react differently to the question : "What was your chief consideration behind getting yourself registered at the Employment Exchange and became a job-seeker ?" Respondents' reactions with regard to the same has been presented in the Table No. 9.8 vis-a-vis their educational level. As regards the reasons for taking up a job the table shows that a single largest group (48%) has been constituted by those who have become job-seekers because of the 'Need for supplementing the family income', followed by those who have become job-seekers because of the 'Desire to be free from dependence on family members and relatives' (29.33%), 'Availability of enough leisure time' (18.66%), 'Desire to avoid the wastage of professional/educational talent' (15%) and 'Desire to have experience of a life outside the household duties and responsibilities' (9.33%), in this descending order.

Analyzing the data in relation to respondents educational status, it is inferred that among the 'Highly Educated' respondents, 37%, have become job-seekers because of the 'Desire to be free from dependence on family members and relatives', followed by those who for reasons such as 'Availability of enough leisure time' (31%), 'Desire to avoid the wastage of professional/educational talent' (21%), 'Need for supplementing family income' (19%), and 'Desire to have experience of a life outside the household duties and responsibilities' (2%), in this sequential order, that they have become job-seekers.

Of the 'Moderately Educated' respondents, a larger section (53%), has become job-seekers because of the 'Needs for supplementing to family income', followed by those who are chiefly motivated by the 'Desire to be free from dependence on family members and relatives' (24%), 'Availability of enough leisure time' (19%) 'Desire to have experience of life outside house hold duties and responsibilities' (19%) and 'Desire to avoid the wastage of professional/educational talent' (13%), in this descending order.

Among the 'Lowly Educated' respondents, a majority percentage belongs to the category of those who have become job-seekers because of the 'Needs for supplementing to family income' (72%), followed by the respondents who have informed that they pendence on family members and relative' (27%), 'Desire to avoid the wastage of professional/educational talents' (11%), 'Desire to have experience of a life outside the household duties and responsibilities' (7%) and 'Availability of enough leisure time' (6%), in this descending order.

In summary, the 'Need for supplementing the family income' has been considered as the chief motivating factor for encouraging the respondents belonging to 'Lowly Educated' and 'Moderately Educated' groups to become job-seekers and get themselves registered at the Employment Exchange/Bureas. In the case of 'Highly Educated' respondents, the prime motivating factor behind encouraging them in their becoming registrants for job has been termed as 'Desire to be free from dependence on family members and relatives'.

Respondents' Level of Educational Attainment at the Time of Survey

Sl. No.	Last Degree Obtained	No. of Respondents	
		No-300	%
a.	Intermediate	85	28.33%
b.	Graduation	107	35.67
c.	Post-Graduation	108	36.00

TABLE 9.2

Respondents' Chief Consideration Behind Their Educational Pursuits

Sl. No.	Chief Consideration	No. of Respondents				%
		HE N-100	ME N-100	LE N-100	Total N-300	
a.	Fulfilment of personal expectations.	31	27	23	81	27.00
b.	Fulfilment of parents'/guardians' expectations.	25	21	29	75	25.00
c.	Good prospects of earning money.	17	30	33	80	26.67
d.	Continuing family's educational tradition.	27	22	15	64	21.33

TABLE 9.3

Persons Motivating The Respondents In Their Educational Pursuits

Sl. No.	Motivated By	No. of Respondents				%
		HE N-100	ME N-100	LE N-100	Total N-300	
a.	Self	21	20	11	53	17.67
b.	Teachers	17	14	18	48	16.00
c.	Husband	07	33	15	55	18.33
d.	Parents/In-laws	27	23	31	81	27.00
e.	Relatives	10	01	05	16	5.33
f.	Friends	18	07	13	38	12.67
g.	Neighbour	-	02	07	09	3.00

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TABLE 9.4
Problems/Difficulties Faced by the Respondents in Educational Pursuits

Sl. No.	Nature of Problems/ Difficulties	No of Respondents							
		HE N-100		ME N-100		LE N-100		Total N-300	%
a.	Financial difficulty	41	69.49	54	77.414	63	80.76	158	76.34
b.	Lack of space in the house to pursue independent studies	07	11.86	35	50.00	20	25.64	62	29.96
c.	Resistance from family members	49	83.05	23	32.85	09	11.53	81	39.13
d.	Harassment by co-students	-		09	12.85	10	12.82	19	9.17
e.	Eye-teasing	12	20.33	10	14.28	05	6.14	27	13.04
f.	Non-co-operative attitude of teachers	07	11.86	25	35.71	-	-	32	15.45
g.	Lack of personal interest	04	6.77	02	2.85	11	14.10	17	8.21
	Base	59		70		78		207	69%
	No Difficulty at all	41		30		22		93	31%

TABLE 9.5
Nature of Help Sought by Respondents to Overcome their Difficulties

Sl. No.	Nature of Problems/ Difficulties	No. of Respondents							
		HE N-59		ME N-70		LE N-78		Total N-207	%
a.	Help of siblings	15	24.42	10	14.28	18	23.07	43	20.77
b.	Help of parents/ in-laws	31	52.54	37	52.85	39	50.00	107	51.69
c.	Help of teachers	05	8.47	02	2.85	09	11.53	16	7.72
d.	Help of tutors	--	--	--	--	02	2.56	02	0.96
e.	Self effort (tutions)	09	15.25	20	28.57	12	15.38	41	19.80
f.	Avoiding situations	01	1.69	13	18.57	-	-	14	6.76

TABLE 9.6

Respondents' Considering Whether Equipped and Qualified to Take up any Employment ?

<i>Nature of Response</i>	<i>No. of Respondents</i>				
	HE N = 100	ME N = 100	LE N = 100	Total N = 300	%
Yes	78	53	37	168	56.00
No	22	47	63	132	44.00

TABLE 9.7

Respondents Perception of Attitude of Family Members Towards their Educational Career by Maximum Education in the Family

Sl. Attitude of No. Family Members		Level of Maximum Education in the Family												Total	%
		Primary	JHS	HS	Inter	Graduate	P. Gra								
a.	Favourable	07	35.00	35	41.66	39	38.61	31	45.58	11	37.93	17	77.27	130	43.33
b.	Unfavourable	11	55.00	29	48.33	51	50.49	19	27.94	08	27.58	02	9.09	120	40.00
c.	Can't Say	02	10.00	06	10.00	11	10.89	18	26.47	10	34.48	03	13.63	50	16.67
		20		60		101		68		29		22		300	

TABLE 9.8

Respondents Observation Regarding Reasons for Taking-up Job

<i>Sl. Reasons for No. Taking up Job</i>	<i>No. of Respondents</i>					<i>%</i>
	HE n = 100	ME N = 100	LE N = 100	Total N = 300	Total N = 300	
a. Need for Supplimenting the family income	19	53	72	144	144	48.99
b. Availability of enough leisure time	31	19	06	56	56	18.66
c. Desire to be free from dependence on family members and relatives	37	24	27	88	88	29.33
d. Desire to avoid the was-tage of professional / educational talent	21	13	11	45	45	15.00
e. Desire to have experience of a life outside the house hold duties & responsibilities	02	19	07	28	28	9.33

Education for Women's Equality Policy Perspectives Vs Performance

Indtroduction

Women's education has been of interest for several decades and this has been reflected in the reports of various commissions. The UN Declaration of 1975, as the year of the women brought about a great renewal of interest in women's status and development. The various international conferences on women held at Copenhagen, Nairobi and the recently concluded Beijing Conference have sharply brought to focus the gender issues. The UNDP Human Developmen Report of 1995 has dedicated the entire volume to discuss gender issues.

Thus, in recent years, momentum has been gathering all over the world, demanding gender equality and push for equal representation of women in all spheres of activity including political, cultural, economic and educational. In spite of conscious and repeated policy proclamations, in India, female participation in education in very low and their participation in higher education is relatively still lower.

In this paper, an attempt has been made to highlight some of the policy perspectives envisaged in the NPE. 1986 and the revised POA 1992 and what has been achieved based on select secondary sources of data and some studies undertaken at NIEPA. The implications and some suggestions have also been provided.

Access to Higher Education

An interesting feature of the women's participation in higher education in India, is the existence of both co-educational colleges and exclusive women's institutions. As far back as 1916, the SNDT Women's University was established, as an exclusive women's university in Bombay. Currently, there are four more exclusive universities. They are the Sri Padmavathy Mahila Viswavidyalaya at Tirupathi, and Mother Teresa University at Kodaikanal. In addition, there are two deemed universities, one is Banasthali Vidyapeeth near Jaipur in Rajasthan and the other is the Avinashilingam Institute

of Home Science and Higher Education for Women at Coimbatore.

As seen in Table 10.1, the number of colleges exclusively for women has increased tremendously in the past decade from 647 in 1982-83 to 925 in 1991-92. It is reported that recently a decision has been taken in Rajasthan to bifurcate co-educational colleges and establish separate colleges for women wherever the enrollment of women students exceeds 300. This policy decision has led to the establishment of over a dozen women's colleges in Rajasthan in the recent past.

TABLE 1
Growth of Women's Colleges

<i>Year</i>	<i>No. of Women's Colleges</i>
1982-83	647
1984-85	712
1986-87	780
1988-89	824
1991-92	925

Source : UGC Annual Report 1991-92.

The profile of state-wise distribution of these colleges located in urban, semi-urban and rural areas was culled out from data available from various sources and is shown in Table 10.2.

Data were available for 704 and 27 colleges in various states and union territories respectively. It is noticed from the table that except for small states in the far east, all the states have a large number of exclusive women's colleges with Uttar Pradesh leading all the states with 83 exclusive women's colleges. The distribution of colleges according to urban, semi urban and rural location varies from state to state. On an average, it is noticed that half the colleges are located in urban areas and one-third is semi urban and less than 20 per cent in rural areas.

The enrollment of women students in higher education has been increasing rapidly since independence and has shown

Table 10.2
A National Profile of the Statewise and Location-wise Distribution of Women's Colleges

<i>State</i>	<i>No. of Colleges</i>				<i>Percentage</i>		
	<i>Total</i>	<i>Urban</i>	<i>Semi-Urban</i>	<i>Rural</i>	<i>Urban</i>	<i>Semi-Urban</i>	<i>Rural</i>
1	2	3	4	5	6	7	8
Andhra Pradesh	71	33	28	10	46.48	39.44	14.08
Arunachal Pradesh	0	0	0	0	0.00	0.00	0.00
Assam	13	7	3	3	53.85	23.08	23.08
Bihar	67	18	34	15	26.87	50.75	22.39
Goa	0	0	0	0	100.0	0.00	0.00

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1	2	3	4	5	6	7	8
Gujarat	20	11	7	2	55.00	35.00	10.00
Haryana	29	8	10	11	27.59	34.48	37.93
Himachal Pradesh	1	1	0	0	100.00	0.00	0.00
Jammu & Kashmir	9	3	4	2	33.33	44.44	22.22
Karnataka	43	23	19	1	53.49	44.19	2.33
Kerala	25	12	4	9	48.00	16.00	36.00
Madhya Pradesh	74	85	11	5	10.81	68.92	20.27
Maharashtra	37	26	6	5	70.27	16.22	13.51
Manipur	0	0	0	0	0.00	0.00	0.00
Meghalaya	1	1	0	0	100.00	0.00	0.00
Mizoram	1	1	0	0	100.00	0.00	0.00
Nagaland	0	0	0	0	0.00	0.00	0.00
Orissa	28	13	11	4	46.43	39.29	14.29
Punjab	56	27	12	17	48.21	21.43	30.36
Rajasthan	34	14	10	10	41.18	29.41	29.41
Sikkim	0	0	0	0	0.00	0.00	0.00
Tamil Nadu	68	40	18	10	58.82	26.47	14.71
Tirpura	1	1	0	0	100.00	0.00	0.00
Uttar Pradesh	83	55	17	11	66.27	20.48	13.25
West Bengal	42	33	4	5	78.57	9.52	11.90
Total	7.4	336	238	130			
Average percentage					47.73	33.81	18.47
Union Territories							
Andaman & Nicobar	0						
Chandigarh	8						
Dadra & Nagar Haveli	0						
Daman & Diu	0						
Delhi	17						
Lakshadweep	0						
Pondicherry	2						
Total	27						

significant progress in the past decade. The enrollment of women students in universities and colleges were around 43,000 in 1950-51 constituting about 10 per cent of the total enrollment. the Kothari

Commission on Education (1966) recommended that the proportion of women's enrollment should be raised to 33 per cent. It is significant to note that this proportion has more or less been reached as shown in Table 10.3.

TABLE 10.3
Enrollment of Women Students in Higher Education

<i>Year of Enrollment</i>	<i>Total Enrollment</i>	<i>Number of women</i>	<i>Percentage</i>
1982-83	31,33,093	8,80,156	28.1
1983-84	33,07,649	9,40,253	28.4
1984-85	34,04,096	9,92,139	29.1
1985-86	36,05,029	10,67,484	29.6
1986-87*	37,54,409	11,48,849	30.6
1987-88*	39,10,828	12,24,089	31.3
1988-89*	40,74,676	12,91,672	31.7
1989-90*	42,46,878	13,67,495	32.2
1990-91*	44,25,247	14,36,887	32.5
1991-92*	46,11,107	15,12,270	32.8

*Estimated.

Source : UGC Annual Report 1991-92.

With this context of women students in higher education, in the next section an attempt has been made to highlight some of the statements made in the policy documents and examine the achievements so far.

What NPE States

“Wider women's access to vocational, technical and professional education at all levels, breaking gender stereotypes”

What is happening

However from data shown in Table 10.4 it is seen that a large percentage of women are in Arts courses and the percentage of women in professional courses like Engineering/Technology, Law, Agriculture is very low, being less than 10% except in Medicine where the percentage of women is 31.7%.

The preliminary analysis of Data available from the ongoing study on women's colleges has shown that most of the women's colleges are offering conventional and “feminine oriented” courses. There are very few women's colleges which are offering courses in emerging areas like computer applications, electronics, bio-technology, microbiology etc. Even the vocational courses are mainly “female oriented” and these do not equip the women students to enter professions which have high prestige and provide better salary, status and advancement in their career. The data shows that about 30 colleges out of the 120 colleges for which data is available have indicated that they are offering at least one or two courses in emerging areas listed above. 24 colleges are offering some form of vocational courses. To some extent, this is a positive trend in the direction envisaged in the NPE.

TABLE 10.4
Enrollment of Women in University
Education--Faculty-wise in the Year 1988-89

<i>Faculty</i>	<i>Total Enrollment</i>	<i>Enrollment of Women</i>	<i>Percentage of Women to total Enrollment</i>
Arts	1,591,012	687,069	43.2
Science	777,740	253,427	32.6
Commerce	848,804	173,957	20.5
Education	90,803	47,557	52.4
Engg./Tech.	181,604	11,263	6.2
Medicine	142,125	45,054	31.7
Law	228,979	20,024	8.7
Agriculture	51,323	2,503	4.9
Vet. Science	11,844	625	5.3
All Faculties	3,947,922	1,251,491	31.7

Source : University Grants Commission, Annual Report of the Year 1988-89, New Delhi.

Infrastructure Facilities

Shat NPE Says

.....“efforts would be made to provide hostel facilities for women students to improve their enrollment in colleges”

What is happening

To assess the gap between current availability and the perceived demand, an empirical survey sponsored by University Grants Commission was completed recently. 233 colleges from 22 states of the country responded to this survey. Of these 96 were co-educational colleges and 137 were exclusive women's colleges. Examination of data for three consecutive years revealed that the percentage of students seeking admission to hostels has been increasing while expansion of hostel facilities has remained static. The demand for hostel accommodation is much more in colleges located in rural areas than in urban areas. This is because rural area colleges cater to students from neighbouring areas whereas urban area colleges cater mainly to local students or they have relatives to stay with or paying guest accommodation is available in big cities.

Instances have been reported where the demand for hostel accommodation is disproportionately large compared to the availability. This had led to more students being squeezed in the existing accommodation and over-crowding and the consequent deterioration in the quality of life in hostels. Various other problems like improper buildings, inadequate buildings, lack of kitchen and dining room facilities and other basic amenities in hostels have been reported. In addition, colleges have also reported lack of classrooms, lack of space for library, laboratory, playground, etc and all these are due to lack of adequate funding.

Empowerment of Women

What NPE States

...“to gear the entire education system to play a positive interventionist role in the empowerment of women”.

The parameters of empowerment have been identified as :

- * enhance self-esteem and self-confidence of women;
- * building a positive image of women by recognizing their contribution to the society, polity and the economy;
- * developing ability to think critically;
- * fostering decision-making and action through collective processes;
- * enable women to make informed choices in areas like education, employment and health, especially reproductive health;
- * ensuring equal participation in developmental processes;
- * providing information, knowledge and skill for economic independence; and
- * enhancing access to legal literacy and information relating to their rights and entitlements in society with a view to enhance their participation on an equal footing in all areas.

What is happening

To examine how far these objectives and the parameters of empowerment identified in the NPE are actually being implemented, a questionnaire survey of the activities of women's colleges is being carried out. Data is available from 120 women's colleges from all over the country. From the indicators of empowerment identified, a Gender Positive Initiative Index has been developed. The preliminary analysis shows that there is a wide variation among the colleges in terms of the initiatives taken to empower women students. A large majority of the colleges are doing very little beyond providing the “required” academic inputs. However, it is satisfying to note that there are a number of colleges, especially colleges run by private managements and missionaries who are doing an excellent job by creating a gender positive climate and providing opportunities for the overall development of women students.

Women's Studies

What NPE States

Women's studies is a critical input to promote better understanding of women's contribution to social processes within social, technological and environmental change, their struggles and aspirations, conceptual obstacles that make them “invisible” in many areas of scientific inquiry. The programme aims to investigate and remove structural, cultural or attitudinal causes of gender discrimination and thus empower women to achieve effective participation in all areas of national and international development. The four dimensions to be supported are :

- (i) Research to advance the frontiers of knowledge, develop human resources and produce teaching/learning material in pursuit of the above aims.
- (ii) Teaching to change present attitudes and values of men and women to one of concern for

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gender equality. Existing biases and deficiencies in curriculum will be addressed.

- (iii) Training of teachers, decision makers, administrators and planners to enable them to play a positive interventionist role for gender equality.
- (iv) Extension or direct involvement of institutions in women's development activities among the community.
- (v) Special efforts will be made to make women's studies centres become more effective through intensive training of their staff.
- (vi) Networks will be initiated to increase output of quality teaching materials.
- (vii) Foundation course should be designed and introduced for undergraduates and this will be done within 8th Plan period.

What is happening

Sponsored as a central, plan linked scheme, the UGC set up 22 women's studies centres and 11 cells in universities and colleges during the 7th and 8th Plan periods. UGC appointed a review committee in 1993 to assess the functioning of these centres.

As far as research is concerned some centres have produced very good research and have got a number of M.Phil. and Ph.D. students from various departments to take up topics related to women. Sponsored by Department of Women and Child Welfare, a major research project on "Girl Child" with a common framework and coordinated centrally has been carried out involving most of the WSCs.

- Many women's studies centres (WSCs) have conducted training workshops for various categories of people including teachers, social workers from NGOs, panchayats, police officers, etc.
- Many WSCs have involved themselves in extension work and have produced very good results.
- NIEPA conducted a workshop for all the directors of WSCs on the Effective Planning and Management of Women's Studies Centres.
- Efforts have also been made in developing some teaching materials.
- Some centres have established excellent documentation centres and have got a good collection of books and periodicals in this area. Efforts have also been made in some publications.
- As far as networking is concerned, it is very weak though some efforts have been made in this direction.
- The promised introduction of Foundation Course in the 8th Plan has not taken off at all due to various organisational hurdles and lack of coordination or acceptance of WSCs by the various rigid academic bodies of the universities.

Though there have been achievements, the success of the WSCs have been very limited. Some of the hindering factors are :

- No full time director
- lack of effective leadership

- no care in the selection of directors
- turnover of staff due to temporary nature of posts
- non-availability of NET qualified staff
- internal personal and ego problems
- too small faculty to be viable
- provision of very meager resources
- inadequate infrastructure
- not securing prior commitment of state govts.
- lack of broader perspective and imagination.
- lack of monitoring by the UGC
- erratic release of funds by UGC
- lack of autonomy for the centres
- lack of sensitivity and support from the university authorities
- lack of clear understanding of the roles of WSCs
- lack of interest from other departments in the university
- undefined and low status accorded to women studies in universities.

Implications and Suggestions

NPE claims that “Education will be used as an agent of basic change in the status of women in order to neutralise the accumulated distortions of the past”. While the objective is laudable, mere rhetoric will not yield the desired results. Mere quantitative expansion by setting up new colleges without concern for the quality and type of courses offered will not lead to the achievement of the goal of empowerment or raising the status of women. Some of the emerging policy implications and suggestion are :

- priority and funding to be made available for starting science courses, courses in emerging areas, vocational courses in women’s colleges;
- adequate funding to be allocated for providing and expanding hostel facilities for women students, especially in rural and backward areas;
- principals of both co-educational and women’s colleges need to be sensitised and trained for creating a gender positive climate in colleges and initiate activities for capacity building and empowerment of women students;
- teachers, both men and women, to be oriented rowards the special needs of women students and trained to incorporate measures for empowering women students;
- Foundation course incorporating women’s issues to be made mandatory for all undergraduate students;
- curriculum in all subjects to be revised to include women’s issues;

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- women's studies centres to be revised to include women's issues;
- women's studies centres to be strengthened for undertaking relevant research, training, extension, curriculum development, developing teaching materials, documentation and publications. In brief, to act as resource centres for women's development;
- colleges to be networked with women's study centres who should provide consultancy and guidance in setting up women's cells and counselling programmes in colleges;
- organise legal education and other life skill and capacity building programmes for women students in colleges;
- provide special funding for promoting these gender positive initiatives in colleges.

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Pricing Higher Education in India

Pricing social sector goods and services is a complicated issue from the point of view of both the theory of pricing and public finance as well as empiricism. Notwithstanding this, the need for re-examination of the several intricate issues relevant to pricing in social sectors like education, particularly higher education is being felt with increasing intensity.

One might define 'social sector goods' as those goods whose costs are incurred, and benefits are received, not by the consumer alone, but by the whole society. Once this definition is accepted, it becomes necessary to adopt an approach to pricing quite different from the standard economic approach to pricing, according to which the user or the consumer pays the marginal cost in full. Education being a social sector good, its pricing becomes a complex proposition, particularly because the mechanism of financing education has a very significant bearing on the outcomes of education. If education has to produce the desired results, decisions regarding its pricing and financing should be based on sound principles (See Tilak, 1992).

Some of the problems specific to education arise because of the very unique nature of this activity. To start with, the objective of education is human resource development, which in turn, leads to overall national development. The concept of 'profit' does not figure in the theory of educational finances. Secondly, distributional considerations are much more relevant in case of education than in the case of most of the other economic activities.

Equity, efficiency, and diversity are the three major goals which guide educational planning. Further, education is consumption as well as investment. Education being a mixture of the two, it becomes difficult to apply the normal economic criteria to it. Moreover, expenditure on education is a social as well as an individual investment. It is a social investment because the future benefits from it are received by society at large. On the other hand, it is a private investment also because those who are educated gain in their capacity to earn during their lifetime, more than those who have not been educated. Because of this dichotomy, there is always a case for pricing on the one hand, and state intervention on the other. This also provides a case for changing the terms of trade between the state and the individuals in relation to the relative shares they should contribute to education. Further,

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education cannot be resold, as it is inseparable from the owner : human capital and the human capitalist are inseparable. Most often decisions to invest in education are taken not by the consumers -- the students, but by their parents. Because of these and many other differences, some of which are described later, between social sectors like education and health, and other goods, at one time education and health were exempted altogether from the pricing mechanism.

But nowadays, in the context of severe scarcity of resources, the need for pricing education, particularly higher education has assumed a new urgency. However, differences of opinion still exist regarding the desirability and feasibility of pricing education, and also on the nature and type of pricing applicable to higher education. The debate is with regard to full cost pricing versus less than full cost pricing; and indiscriminately uniform pricing versus discriminatory pricing; etc. There are arguments on each side and inevitably pricing of education has become a politico-economic issue, not just an economic issue.

The advocates of pricing view it as a "multi-purpose remedy" for several problems (e.g., Hall et al., 1975). Some even argue that by proper pricing, the supply of higher education can be substantially increased, efficiency in the provision of education can be improved, and even equity in the access to education can be enhanced (Jimenez, 1987, 1989). On the other hand, opponents of the pricing of education view education as a social good that cannot be priced at all. Since education is a social good, it should not be rationed on the basis of the consumers' ability to pay. Besides, since pricing obviously results in rationing, it should not be priced at all (Weisbrod, 1988). When priced, the demand for higher education and also the investment in higher education will tend to go below socially optimum levels, unless society at large also subsidises higher education (Nerlove, 1972, p. 178).

It is also argued that supply of education may not increase with pricing, and even if it is possible, "higher supply strongly biased toward more privileged groups may be worse than lower supply" (Stern, 1989, p. 145), since equity would also get adversely affected.

While the arguments are strong on both sides, and the debate cannot be satisfactorily resolved in favour of either approach, one is left with no choice but to recognise that in practice, pricing does take place somehow. However, due to difficulties in the application of an efficient pricing mechanism, the approach to the pricing of education, as practiced in several developing and developed countries, pays little attention to economic criteria. In practice, pricing degenerates to the collection of some revenue here and there in a fairly haphazard way, as a symbolic gesture of acceptance of the philosophy of pricing. Fees charged in most of the higher education systems run by the public are quite consciously set below any plausible estimate of what it costs to educate a student.

In this paper it is proposed to discuss some of these issues, focusing on higher education, in order to outline a pragmatic approach to the pricing of higher education. In the following section, problems of pricing of education are discussed. Section 3 presents a feasible and desirable model for pricing of higher education. As an illustration, evidence derived from India is presented in the Appendix to examine the benefits of the model suggested with reference to one important function of pricing, viz., additional revenue generation. The paper ends with a few concluding observations.

Problems in Pricing Education

Three main functions of the price mechanism in economic theory are : efficient allocation of scarce resources in the economy; rationing the demand and supply of the given good or service; and

raising revenue to finance the production of the same. Further it is also argued that cost-reflecting efficiency pricing checks abuse or misuse of resources, besides serving the symbolic function of expressing faith in the market system.

As Musgrave (1959) noted, the pricing mechanism serves the above functions, provided certain rather stringent conditions are met. These are reasonably well met over a wide range of economic activities, but not necessarily in case of social sector goods and services. The conditions which need to be met relate to the nature of the market (perfect competition), dissemination of information (perfect : consumers are the best judges), and income distribution (equitable). Besides, it is assumed that the goods and services do not generate externalities. It is also argued that pricing under a market mechanism requires that it should be technically possible to exclude those potential beneficiaries who prefer not to pay for it; private demand for the good should be price elastic; it should be possible to specify the quality and quantity of each unit of output; and costs of collection of the price charged should be relatively low. When these conditions are not met, pricing does not serve as an efficient mechanism. There are certain goods like *public goods*, besides certain other goods characterised by 'lumpiness of productive factors' etc., in the case of which the pricing mechanism cannot be applied in straight forward manner or it can be applied only marginally,

First are the goods and services that are characterised by external economies or diseconomies, or those with 'neighbourhood effects' (Friedman, 1955), where not only the individual who purchases them but also those individuals who do not, derive a benefit. The individuals who benefit will be ready to pay, but as others also benefit, they will not be ready to pay 'fully'. As the social benefits are not equal to private benefits, and as there are differences between social and private risks, there will be differences between social cost and private costs. In this case, the market allows a price to be charged, as these goods are also, at the same time, 'private' goods, but the price will not be 'socially optimal'. In other words, the market mechanism works but it involves varying degrees of inefficiency. Thus corrective action by the society is necessary.

Then, there are *social goods* (or *social wants*), which are essential to all; they must be consumed in equal amounts by all comprising society as a whole. Their enjoyment cannot be made conditional upon the payment of a price since the benefits cannot accrue exclusively to them. Since no body can be excluded from the resulting benefit, preferences are rarely revealed in clearly quantifiable terms; this makes the pricing mechanism ineffective. Further, in case of such goods, as Musgrave (1959 p. 9) states, there is no single most efficient solution to the satisfaction of social wants or to the problems of supplying services that are consumed in equal amounts by all, and a more specific welfare function is, therefore, needed in place of a market pricing mechanism as these goods must be made available free of direct charge to the user.

Then, there are *merit goods* (or *merit wants*), another category of public goods, that are considered so meritorious that they are financed by public budget, over and above what is provided by the market. They are provided by the market within the limits of effective demand, subject to the exclusion principle. They are distinct from social goods, as they need not necessarily be provided to all in equal amounts. While in the case of social goods, individual preferences are not considered (as they are not revealed), in the case of merit goods, the mechanism involves interference with consumer preferences. However, the consumer preferences and the consumer sovereignty may not perfectly match with the society's preferences, due to imperfections in knowledge and information.

Thus, the market mechanism, and the principles of economic pricing do not apply to public goods, *inter alia*, due to : (a) externalities; (b) inadequate information and knowledge of benefits; (c) distortions in the labour market; (d) distortions in the financial markets; and (e) the impossibility of rationing or limiting availability only to those who are able to pay for it (Musgrave and Musgrave, 1989, pp. 41-58; and also Jimenez, 1987, pp. 23-25). Does education come under this category? Or does the education sector meet the stringent conditions necessary for the efficient functioning of economic prices?

Education in most economies is provided to a substantial extent, by the state. Accordingly, there can be little competition in educational enterprises. This is so, even in those countries where the private sector plays a significant role in education. There are, in addition, imperfections in capital markets in the developing countries. There are risks-predictable and unpredictable-involved in education, and there are imperfections in flows of information about several educational institutions. Insurance markets are too imperfect to alleviate this fully. Income distribution is markedly unequal in several societies. Education generates externalities. Therefore, it may not be possible to exclude those beneficiaries who prefer not to pay for it. The private demand for higher education is also found empirically to be not higher education can be elastic not only to the price charged, but also to the students' own costs of acquiring education (Nerlove, 1972, p. 192). There are also familiar problems of accurate measurement of inputs and outputs in the education industry. Higher education produces *joint* output-under-graduate and graduate education and also research. It produces better citizenry and economic productivity simultaneously. And so on. Given all this, one may ask : can a pricing mechanism be applied to education? Can student fees be used as a price in the economic sense? In short, does all this mean that principles of pricing cannot be applied to education? As Nerlove (1972, p. 178) argues, it should and can be.

Musgrave (1959) himself classified education as a public merit good; and higher education a 'quasi public good' (Blaug, 1970, p. 107; Levin, 1987; and Tomlinson, 1986). Sometimes these goods are also referred to as 'mixed goods', though mixed goods are essentially private goods, with externalities (Musgrave and Musgrave, 1989). Education yields benefits to the individuals, in terms of higher earnings, and produces spill-over benefits to the society for which their consumption is non-rival. With consumption being non-rival in the case of these goods, exclusion would be inefficient, even if possible. But higher education is neither a pure public good like national defence, or clean environment and pure air, benefits of which are received equally by all members of the society, nor is it, of course, a pure private good like food, the benefits of which are exclusive to those who consume. It is both a private and a public (or social) good. Private individuals may not be willing to pay for pure public goods as those who pay for it cannot exclude those who do not pay for receiving their benefits. They tend to act as 'free-riders'. Hence government must tax the citizens and provide the pure public goods out of the general tax revenue. On the other hand, since individuals purchase sufficient quantum of pure private goods and as the principle of exclusion does not apply in the case of such goods and the society's consumption may be at an optimal level, government intervention is generally not needed.

Problems arise in the context of semi-or quasi-public goods like higher education. In the case of such goods, individuals will be willing to pay for them, as these goods are associated with private returns. It is partly due to this willingness (resulting from the realisation regarding the future benefits that accrue) that the issue of pricing of education arises. However, the returns are not exclusive to

individuals who purchase it. It is not possible to exclude the less educated from the various externalities generated from the higher (or more) educated. The rest of society also benefits along with the individuals who invest in education. The neighbourhood or externality benefits of education are indeed substantial. In other words, the social benefits are not simply equal to and may indeed be greater than the sum of private benefits. The purchasers of these quasi-public goods do not take into account the non-private benefits of education even though the social benefits are far greater than those perceived by individuals. The social benefits include mainly economic growth, income distribution, political, economic and social system behaviour, geographic mobility, social and economic mobility, and inter-generational benefits.

Education is also a sector where the gestation period is rather long, and the benefits-direct and indirect-flow over generations. Many direct and indirect benefits cannot be quantified, making it difficult to accurately estimate social benefits of education; thus making the process of pricing complicated. Of course, "public good qualities of a public service may exist even if they are not documentable" (Summers, 1987, p. 643). As a result, the total private investment in education would not be equal to society's desired or optimum levels of investment in education. At the same time, as there are individual returns to investment in quasi-public goods, investment does take place in the individual domain (Majumdar, 1983), and there does exist a private market-but the private market alone cannot ensure optimal levels of social investment. Accordingly, government intervention becomes necessary in the provision of quasi-public goods.

In case of pure private goods, individual choices are important, or consumer sovereignty exists. But in the case of quasi-public goods like education, government intervenes to change, if not to override the tastes for and demand of the people for quality and quantum, as education also represents a "social merit good". By treating education as a public good, it may be argued that individual preferences are subdued and the state imposes its own preferences and, by economic pricing of education, consumer sovereignty is restored. This is an extreme argument.

To sum up, efficiency pricing *per se* is not relevant to education due to the importance of the importance of externalities, poor capital markets, and inadequate knowledge. Education, even higher education, cannot be left entirely to the profit motivated private sector. State intervention is absolutely essential as the market mechanism does not succeed in the provision of education due to (a) 'public goods', (b) consumer ignorance, (c) technical economies of scale, (d) externalities in production/consumption, (e) non-exclusiveness, and (f) inherent imperfections in the market. All this suggests the need for state intervention not only for the provision for supply, but also, to some extent in the matter of pricing.

Thus, it is generally agreed that education, higher education in particular, has to be subsidised by the state though, at the same time, it should be priced at a price the consumers can pay. At least three kinds of state subsidy as needed : first, pricing, even under the market mechanism, when it is equal to marginal cost, will not enable the recovery of full costs, as the marginal cost is less than average cost, or simply as economies of scale exist (e.g., see Brinkman and Leslie, 1986; Clotfelter et al., 1991; Psacharopoulos, 1980; and also Cohn and Geske, 1990), and hence the state should subsidise. This can be called "allocative efficiency subsidy." Second, the state should provide an "external benefit subsidy", as there are external, or non-private, benefits over and above what the consumers pay for, in lieu of the direct private benefits received. Thirdly, the state should provide a "welfare subsidy" to subsidise the education of those who cannot pay (Judge, 1980). The third argument requires adoption

of differential pricing so that consumers with low levels of ability to pay are not deprived of higher education. A positive subsidy to higher education is demonstrated to be optimal even when society has a neutral view about income distribution (Johnes and Johnes, 1994). It may thus be noted that the state intervenes in the system primarily to redirect and facilitate the functioning of the market mechanism towards goals that society values more than economic efficiency (Waltenberger, 1974).

Such a system of mixed financing also allows that where the benefits are separable, they could be priced. Pricing higher education, however at variance with efficient economic pricing, is argued by many to be desirable, as pricing is essential for making true resource and opportunity costs more explicit to both the producers and the consumers and thereby prevent its wastage by both. Besides, it generates much needed revenue; the information released as a consequence of economic pricing promotes consumer choice; and it can lead to efficient allocation of resource since the 'pricing mechanism is a form of voting' (Judge and Matthews, 1980).

In short, it appears that though economic pricing of higher education (equal to average or marginal cost) is neither desirable nor possible, some sort of pricing of higher education is possible. Even though such a mechanism of pricing of higher education does not serve all the traditional functions of the pricing mechanism applied to normal economic goods and services, it does serve some of them—some efficiently and some less so. While revenue generation is the most convincing function that pricing of higher education can perform, as an instrument of promoting allocative efficiency its role is the weakest. Moreover, the role of pricing in promoting equity is doubtful and, in any case, "pricing has no intrinsic superiority, from the equity point of view, over any other method" (Ndulu, 1989), p. 142).

Some of the objections raised against the application of pricing to higher education can be met by making modifications in the methods and quantum of pricing such as : less than full cost pricing to take into account the external benefits of higher education; and differential pricing to adjust for income distribution, etc. Such an attempt is presented in the following section.

A Pragmatic Approach to Pricing Higher Education

The fee is treated as a price for education, though it is not the only cost to the student. The student pays other prices which are also substantial. Though fees are treated as a price for education, it is rarely expected to perform the role of the price in a market mechanism. The determination of this price depends on the general approach of the given society towards education. Consequently, the role of the fee as a price varies among different socio-political and economic systems.

In the (erstwhile) planned or socialist economies, education was financed and controlled by the state. Since education, like the other productive sectors, was wholly funded by the state, the price of education, if any, was computed primarily for social accounting without any substantial implications for the individual who received education. As a result, the issue of fees either as a mechanism of resource allocation or as a funding device were of no great significance in these economies.

On the other hand, in the market framework, education becomes a commodity to be sold and purchased in the market. Profit being the motivating factor in a market mechanism, education may be priced so as to cover the full cost of production, inclusive of normal profits, though education or higher education sector at large are rarely so priced. However, cost and benefit considerations do come in, and the amount of education purchased by the individuals depends on their estimation of the future benefits that may accrue from education to them on the one hand, and their purchasing power

on the other. Individuals demand education only if investment in education brings more benefits than the returns from other forms of investment. Thus the price mechanism comes into play, though not fully and efficiently.

However, in practice, in many market economies, including many developing economies, where the role of the state becomes important, along with the operation of market mechanism, the pricing of education (i.e., determination of fees) assumes much significance. Unlike in the socialist economies, a fee is charged, but also unlike in the purely competitive systems, it is not based entirely on cost benefit considerations, and it does not serve the function of allocation of resources efficiently. Because of the 'publicness' and the resulting state intervention, education is provided under an administered market or, to some extent, state controlled market. This by its very nature necessitates administered prices rather than prices based on the profit motive. Therefore, the thus determined prices will be positive but less than the demand and supply determined market prices. In other words, fees will be less than the average cost of providing education.

The pragmatic approach to pricing higher education, described later below, is based on the following considerations:

First, in economies characterised by price distortions, the efficiency price needs to be calculated on the basis of the real cost, or the shadow price, of its inputs or replacement. But when the price distortions are large, second best considerations require that the actual price differs from the calculated efficiency prices (Julius and Alicbusan, 1989, p. 17).

Most importantly, global economic problems make pricing higher education imperative. Public budgets for higher education have been shrinking in several countries throughout the world—both developed and developing, particularly in real prices on per student basis; and the prospects for a dramatic reversal in the trends are not bright. Under the stagnant and declining budget trends, there are three options for higher education systems: either higher education will be provided to smaller and smaller number of students, with closure of some institutions; or, quality of higher education will be provided to smaller and smaller number of students, with closure of some institutions; or, quality of higher education may suffer significantly with less and less expenditure per student (this is what is happening more predominantly); or, non-governmental resources will be generated for higher education to meet the increasing demand and to provide good quality higher education, along with concerted efforts to improve both supply-side and demand-side efficiency (Tilak, 1993b). The third alternative seems to be the desirable one. Within this framework, pricing higher education should be viewed as a positive and potential alternative, since it helps in revenue generation as well as in enhancing efficiency functions. Zero or very low price for higher education has been found to be a sound proposition only in exceptional cases, not generally, or in the long run, from the point of view of either equity or efficiency in higher education.

The principle of pricing has to be applied to education quite judiciously, so that the basic educational considerations do not get neglected. Higher education may be priced but clearly, primary education should be exempted from the application of the pricing mechanism, as it is regarded as a 'pure public good'. Even in higher education, full cost recovery, not to speak of profit making, should not be attempted through pricing, as the rationale for state subsidisation of higher education is obvious. The externality and public good arguments do apply to higher education, though not as much as is the case for primary education. As the utility of higher education to individuals who do not purchase it is

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positively influenced by the consumption of the same good by others who purchase it, in order to maximise utility, the economic price for each consumer should be lower than the marginal cost of production. Besides, the externality effects of subsidisation of higher education on income distribution are significant (see e.g., Kang, 1991; Kodde and Ritzen, 1985; Johnes and Johnes, 1994; and Johnson, 1984;). In short, only a 'reasonable' proportion of costs can be recovered through pricing.

It is necessary that pricing of higher education should not be used to check the demand for higher education. In fact, it cannot be done, as in most countries, demand for higher education is found to be relatively price (fee) inelastic (Jimenez, 1989, p. 116; also Turner, 1969; and Handa, 1972).

Pricing higher education cannot be indiscriminate; it should be sensitive to the heterogeneous composition of the student population in a given society. The economically poor strata of the student population cannot be charged an unbearable price for higher education. Welfare considerations cannot and should be replaced by market considerations.

Due to the well accepted norms regarding higher education, merit, and not the price, should determine the growth of higher education. In other words, higher education of the economically poor, but academically meritorious, should be financed by the state. Inability to pay the price should not deter the meritorious students from seeking admission to higher education.

Keeping these considerations as essential guiding principles for pricing higher education, an attempt is made to present hereinafter an alternative model for pricing higher education.

Discriminatory Pricing

Economic theory allows differential or discriminatory pricing of some social sector goods, like higher education, depending upon the differential ability of the consumers to pay for these goods. In several developing countries, and also in some developed countries, higher education is a favoured sector of the economically privileged groups of the society, at least some of whom are able to pay higher levels of fees, if not full costs. The better-off students can be made to pay higher levels of fees, while the relatively poorer students will pay lower levels of fee, or in some cases no fee at all. This is the basic principle of discriminatory pricing.

In general, one finds that at least one-fourth of the students in higher education in the developing countries belong to families of very high economic stratum, and in the professional faculties such as medicine, engineering and business management this proportion goes up further. Most others in higher education also have 'ability to pay' but at a level very much lower than those who belong to the very high economic stratum. About 25 per cent of the students in higher education in developing countries like India may not be in a position to pay any fees at all. Over a time period, these relative proportions may change, but not significantly in several countries over the next decade and more.

The model of discriminatory pricing suggested here is based on the presumption that the costs should be shared by the state and the students, in some proportion. First, the capital costs of higher education should be borne entirely by the state. Second, even the recurring costs should not be recovered fully from any student. These two arguments take care of 'external benefit subsidy' mentioned earlier. Tentatively, one may argue that at most about 75 per cent of the total recurring costs of higher education might be recovered from any student. No student can, with any justification, be asked to pay more, in view of the public good argument enunciated earlier.

The Model

The model has two components: the fees, and direct subsidies. According to the discriminatory pricing model, one can suggest that the students belonging to the top income strata (the highest quartile) in higher education may be required to pay a fee which would cover 75 per cent of the instructional cost per pupil while the middle income group (second richest quartile) pay about 50 per cent; the third quartile pays 25 per cent of the instructional costs, and the bottom quartile may be exempted altogether from payment of any fees. If the top and the middle income groups, who constitute not less than 50 per cent of the total enrollment in higher education, are required to meet 50-75 per cent of the instructional costs, the resource generation might reach such a level that the low income group (the bottom 50 per cent of the students) can as well be exempted from the payment of fees altogether. Yet the model yields reasonably a high level of resources, as shown in the Appendix.

Such a differential fee structure, further supported by a large scheme of specific subsidies, confined to the lower income groups only, would undoubtedly be progressive in nature. Further, it may add substantially to the resources of the higher education system.

Hence, simultaneously, along with discriminatory fee system, direct financial subsidies such as scholarships should also be discriminately provided. As lower levels of fees and exemption of fees for the bottom quartiles would provide significant financial relief to the poorer students, there would be no need of scholarships to compensate for fees. However, they may still need financial assistance to cover non-fee private costs including, in case of some students, opportunity costs of participating in higher education. Thus, all scholarships and financial assistance programmes need to be targeted for the bottom half of the student population. Financial incentives to encourage and reward merit should, however, be extended to all income groups as these are not to be related to the financial needs of the students. Tentatively, one can argue that half to two-thirds of all the scholarships should be awarded to the lower half of the students on the basis of the criteria of merit *and* ability of the students, and the remaining one-third to half of the scholarships should be given purely on merit, irrespective of the fact whether the students belong to the lower or upper income categories. Such a discriminatory incentive scheme will be both efficient and equitable: all the meritorious students will be rewarded; at least 50 per cent (or two-thirds) of the scholarships would go to the poor, and the higher the proportion of meritorious students in the lower economic classes, the higher (than 50 per cent, or 67 per cent) will be the scholarships for the lower strata. Thus discriminatory fee policy along with discriminatory incentive system could be highly progressive.

One may suggest that it is not the present levels of income but the lifetime earnings that should be taken as the basis for the discriminatory pricing mechanism since higher education will enhance productivity and correspondingly raise the lifetime incomes. However, this line of thinking points more to student loans rather than to subsidies and fees (see also Lommerud, 1989). While higher education does enhance the future lifetime earnings, it may not be efficient and feasible to consider future lifetime earnings, it may not be efficient and feasible to consider future earnings levels to determine the present levels of fees in higher education, in view of imperfections in capital market, including unequal access to capital market, and graduate unemployment. But in the context of other methods of cost recovery including student loans and improved methods of general and specific taxes such as graduate tax, it would be efficient and feasible, to take lifetime earnings into account.

The Advantages

Discriminatory pricing is more advantageous than uniform level of pricing since it, *inter alia*, reduces the perverse effects of public subsidisation of education. Indiscriminate public subsidisation of education is inequitable because its benefits accrue primarily to the wealthy, further widening the gap between the privileged few and the masses. Countries which are characterised by great inequalities in income and wealth, and in which access to (higher) education is limited to a small proportion of population, the existing pattern of indiscriminate public subsidisation tends to expand the educational and economic gaps between the haves and the have-nots (Adrain, 1983, p. 456). Therefore, discriminatory pricing is advocated to make existing educational subsidies more equitable. This equity consideration is based on the principle "that equal subsidies in the world of unequal incomes cannot plausibly contribute to improve the distribution of income" (Jallade, 1978, p. 318).

In an inequitable society, indiscriminate fee structure, by its very nature, is regressive. That is to say, if unequals take part in the educational process, equal subsidies will result in inequity in distribution of outputs. Therefore, equity in output can materialise only through discriminatory pricing. In other words, a discriminatory fee structure helps in equitable distribution of subsidies. It suggests the need for pricing of education in a more rational way. And this rationality, based on an economic background, should be preferred to discrimination— positive or negative on the basis of social origin, race, religion, caste or creed.

When the economic system as well as education's rewarding system are inequitable, it is illogical to maintain an equal fee system, if one has any consideration for equity. A pattern of indiscriminate subsidies in higher education is dangerous and it should be replaced by an alternative system where public subsidies should be inversely related to incomes (Jallade, 1978, p. 318). Hence a discriminatory pricing system in higher education may be a better alternative.

The unequal reward system in the labour market also reaffirms the necessity of a discriminatory fee policy. Higher education confers benefits unequally on different socio-economic groups of the students. This unequal distribution of benefits is evident from labour market rewards in terms of employment patterns and the earnings structures of graduates. Graduates from high income families end up with low levels of unemployment and high paying jobs, and graduates from poor families tend to have longer periods of unemployment and lower earnings. Therefore, discriminatory fee structure is desirable not only from the point of view of those 'who receive higher education' but also from the point of view of those 'who benefit from higher education.' In other words, from the point of view of benefits also, it is irrational to follow a non-discriminatory and non-differential fee structure in a situation in which the benefits of higher education are unequally distributed.

Under the discriminatory pricing system, higher education is accessible to all—to those who have the ability to pay as well as to those who are unable to pay. Again, since the abilities of all those who can pay are not the same, the pricing system should follow a pattern of multiple prices for more and less better-offs. In the discriminatory fee structure, students in the same level and type of education will be paying fees, differentially. In other words, discriminatory pricing helps in raising the revenue for higher education on the basis of the principle that those who are able to pay should pay more than those who are not in a position to do so.

Thus the adoption of discriminatory pricing system in education will ensure more equity and more resources for higher education. In other words, the discriminatory pricing mechanism can be seen as a device to raise more resources with more of redistributive justice. Another added advantage of

this system is that if education is made costly for the rich, the existing 'baby sitting' role of higher education will also come down. Students and their parents, when confronted with high cost prices, "make decisions about whether to go to college ... in full recognition of the real resource cost-implications of their choice. This should lead to a more efficient allocation of resources" (Hansen and Weisbrod, 1974, p. 119).

Discriminatory pricing has certain other advantages also, in addition to the general advantages of pricing, including the generation of additional resources. Being based on costs of education, if the cost of a particular type of education, say engineering education, are higher than that of general education, the proposal automatically guarantees a higher level of fees in engineering education, and vice versa. Similarly if costs of education increase over time, fees will also increase correspondingly. Levels of fee may also vary across different regions in the country depending upon the regional variations in costs of education, and this may also promote competition and efficiency.

More importantly, it also needs to be noted that such a system of discriminatory pricing will not have any adverse effects on the quality of education, as discrimination here is based only on family income, and no relaxation is advocated with regard to the eligibility criteria for admission for *any body*, nor is it argued that varying qualities and quantities of education should be provided to the pupils under the system of discriminatory pricing as argued by some others (e.g., Stubblebine, 1965, p. 19). In short, all students, whether they pay zero percent or 75 per cent of instructional cost would be admitted on the basis of the same criteria and receive education of the same quality and quantity at the same place. The poorest students would receive the same education as the wealthier students, in the same system, but without paying any fees. This would obviate the need for creating dual structures of education which usually provide education of high quality for the rich and of poor quality for the poor. This is highly divisive socially, economically, politically, and educationally. The model of discriminatory pricing suggested here is also not based on the differentiation of innate abilities of the students, as suggested by some.

Further, the proportion of cost to be charged as fee would depend upon the relative ability of the students and their families to pay, the better-off paying higher levels of fees than those coming from poorer families. It would thus be a singular advantage in terms of gains in equity. This would turn the fee, "the most regressive form of taxation ... which falls more heavily on the poorer classes of society and ... [is] an anti-egalitarian force" (Education Commission, 1966, p. 111) into an instrument of progressivity.

Discriminatory pricing may not have any significant adverse impact on demand for higher education in developing countries, as demand for higher education is mostly inelastic or less elastic to fees. As there is excess demand for higher education, even for expensive education, discriminatory pricing may not probably result in any significant diminution in the enrollments in comparison to the impact of uniformly steep increase in fees. Further, since it is only the relatively wealthy who would be required to pay fees, the demand for education from lower income groups would register no decline. If at all there is any negative effect, the discriminatory incentive scheme should be able to counter balance it. Moreover, higher education becomes expensive for the wealthy, the internal efficiency of higher education might be improved through better inputs. The baby-sitting role of higher education gets reduced, and only genuinely interested students seek admission into higher education.

Having noted all this, it should be added that the suggested reform of discriminatory pricing and incentive mechanism can only be a partial solution to the problems of financing and equity in higher education in developing countries, and equity in the society in general.

Concluding Observations

In this paper a few important issues on pricing higher education are discussed. There are several important aspects relating to higher education which make application of standard principles of economic pricing difficult, and even inappropriate. But *prima facie*, a case for pricing social sectors like higher education seems to exist. It has been shown here that higher education can be subjected to pricing even though prices would not serve the traditional roles they serve in the market mechanism. The approach to pricing will have to be judicious so that the main characteristics of higher education do not get disregarded. Once the need for pricing higher education became obviously inescapable for a number of countries, suggestions were put forward advocating that fee be raised uniformly for all the students. On the other hand, it has been shown here that discriminatory pricing will be more advantageous than no pricing, or uniform or indiscriminate pricing. Generation of revenues for higher education, and making the financing of higher education less regressive, if not highly equitable, are the two main points in favour of discriminatory pricing.

Towards the end, a couple of additional points may be noted. First, fees here refer to tuition charges only. But the arguments apply to all the other important items of educational process as well, for which generally some fees are charged, such as admission fees, registration fees, examinations fees, and also fees for medical care and health facilities in the universities as well as the charges for living and boarding arrangements. However, there may be some items which can be subject to full cost pricing, or can be subsidised liberally or moderately. They may have to be examined with a different set of principles.

Similarly one may have to make a distinction, to the extent possible, between higher education and research even though they are 'joint' products, as noted earlier, while formulating pricing and subsidy policies. Perhaps due to externalities, research may have to be totally exempted from pricing.

At this stage, an administrator may ask a question: why will (or should) one pay a different (higher) price for the same good or service, than the others, as proposed in the discriminatory pricing model here? The answer can be found by extending the principles of taxation to pricing. Direct taxes, like income tax, and wealth tax, are based on the principle that those who are more able to pay should be required to pay more than those who are less able to pay. The discriminatory pricing model is also based on exactly the same principle.

Lastly, it may be reiterated that discriminatory pricing is not a 'multi-purpose remedy' for all problems of financing higher education. However, it may be an effective though partial solution for some of the problems of financing higher education.

To conclude, decisions regarding pricing higher education can be made more reliably if (a) externalities of higher education could be quantified; (b) there are detailed estimates of the price elasticity of demand for higher education in several countries; (c) detailed research evidence is made available on the distributive consequences of pricing, and of various models of pricing; (d) the impact of pricing higher education is examined carefully on the demand and supply efficiency of higher education; and above all (e) the relative efficiency of pricing over other methods of financing higher education is established. Research on all these aspects is limited, but it is crucial for the formulation of better and rational public policies on pricing higher education.

Discriminatory Pricing in Higher Education in India

One may like to examine and verify the benefits which would accrue from discriminatory pricing in terms of additional revenue generation for higher education. As an illustration, the case of higher

education in India, one of the largest, democratic and developing economies, is described here.

Higher education is a gigantic enterprise in India, involving huge expenditure and dealing with very large numbers of students, teachers and number of institutions. While higher education in India consists of several layers and types of institutions, the discussion here is concentrated on universities and colleges which provide graduate and higher courses, forming the largest chunk of higher education. In 1984-85, the latest year for which such data are available, there were 280 thousand students in universities, and 5.2 million in colleges. The total recurring expenditure was of the order of Rs. 3,938 million on universities, and Rs. 8,565 million on colleges, i.e., Rs. 14,064 and Rs. 1,647 per student respectively. There is no discriminatory pricing, though some students from social and economically weaker sections might have been totally or partially exempted from the payment of tuition fees. (Reliable data are not readily available.) On the average, a student in universities was charged a fee (tuition, hostel and other fees) of Rs. 2,010.80, and Rs. 239.50 in colleges. As can be seen from Table 11.1 fee income formed 14.3 per cent of total recurring expenditure in universities and 15.5 per cent in colleges.

Of late, it has repeatedly been argued that steps should be taken to increase this proportion significantly--to about 20-25 per cent (UGC, 1993; AICTE, 1994), and even to 50-100 per cent (Rao, 1992; Dandekar, 1991). Suggestions have been made for raising the fee levels, steeply and uniformly for all the students. While this is being attempted randomly in some universities by concentrating on certain types of fees (e.g., examination fees, application/registration fees, library and laboratory fees), or on certain groups of students (like the new comers), a general resentment is brewing against uniform steep increases in fees on the ground that a uniform increase in the fees will have a much severe impact on the economically weaker sections of the student population. Hence the emphasis on the case for discriminatory pricing.

The case for discriminatory pricing exists and will continue to exist as long as the students or their parents possess unequal resources and abilities to pay for education. Table 11.2 presents distribution of students by per capita consumer expenditure classes, a very reliable proxy for income classes. These data collected by the National Sample Survey (42nd Round) in 1986-87, are actually by decile groups, and are available for rural and urban areas separately. They have been converted into quintiles and the totals (rural plus urban) have also been calculated here. Such data are rarely collected.

A couple of points are glaringly obvious from Table 2: higher education is predominantly the preserve of the rich. Enrollment in higher education increases systematically with the rise of expenditure/income levels. About a quarter of the student population in higher education belongs to the top 10 per cent of the affluent classes. In this respect, rural and urban areas show no significant differences. Not more than one-third of the students come from the bottom (poor) three expenditure quintiles. This has an important implication for the suggested discriminatory pricing model, in which, 25 per cent of the students are to be exempted from payment of fees and under an alternative assumption, the bottom 50 per cent of the students are to be exempted altogether from payment of fees. The remaining students can safely be charged fees, as they belong to higher economic strata. These proportions can be subjected to modifications based on the number of actual proportion of students belonging to weaker sections. For instance, the corresponding proportion comes to around one-third, according to the figures in Table 11.2.

Without necessarily making this modification in the suggested model, it can be shown that discriminatory pricing, as shown in Table 11.3, yields significantly higher levels of revenue. Column 2 in Table 11.3 gives the distribution of actual enrolment by income quintiles. Column 3 gives the

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average fee charged per student. Column 4 gives the total realised fee income under the prevailing system. Columns 5 and 6 give the proposed normative fee rates under the discriminatory pricing system under alternative assumptions. The fee is based on the unit recurring expenditures. University students in the top income quartile will be required to pay 75 per cent of the unit recurring expenditure, which works out to be Rs. 10,548.75 per student. Students belonging to the second income quartile pay Rs. 7,032.50 as fee, which is 50 per cent of the recurring expenditure per student. According to alternative A, students in the third quartile pay 25 per cent of the unit recurring expenditure, i.e., Rs. 3,516.25, and the students in the poorest income quartile do not pay any fee. The corresponding total fee income from each income quartile is given in the last column. The total fee income in the universities will be Rs. 1,476.8 million under alternative A. Under alternative B, in addition to the students in the bottom income quartile, students in the third income quartile are also exempted from payment of fee, which means that only the students belonging to the top two income quartiles will only be required to pay. The last two columns present the estimates of total likely fee income under discriminatory pricing system. Then the total fee income in the universities under alternative B will be Rs. 1,230.6 million. The later half of the table presents similar details with respect to colleges. The total fee income in higher education (universities plus colleges) will be Rs. 3,239 million and Rs. 2,703 million under assumptions A and B respectively.

It may be noted that compared to the present (1984-85) level of fee income, under discriminatory pricing, the total fee income of higher education system in India is more than doubled: it is 2-2.6 times the present level under alternative assumptions. This is not an insignificant increase. The contribution of fee increases to a level of 31.3-37.5 per cent of the recurring expenditure under alternative assumptions, compared to the present actual level of about 15 per cent. The level of 30 plus per cent is comparable with the share of fee income in private higher educational institutions in the United States, and is higher than corresponding figures in public institutions in many other developed and developing countries (Tilak, 1993b).

Available data do not permit estimation of the impact of discriminatory pricing on other aspects, such as on demand for higher education, equity in access to higher education, and demand for higher education, equity in access to higher education, and demand and supply efficiency. As argued earlier, the positive effects of discriminatory pricing, which should be viewed only as a second best solution, seem to be significant.

TABLE 11.1
Expenditure on Higher Education in India, 1984-85

<i>Enrollment</i>	<i>Total Recurring Income (Rs in Millions)</i>	<i>Total Fee per Student</i>	<i>Expenditure</i>	<i>Fee of Expenditure</i>	<i>Fee as Expenditure (Rs.)</i>	<i>% ('000s)</i>
Universities	280	3938	563	14064	2011	14.3
Colleges(*)	5200	8565	1324	1647	255	15.5

Note: * Degree and above levels only.

Source: Based on *Education in India 1984-85* (New Delhi: Government of India, Ministry of Human Resource Development, Department of Education, 1992).

Distribution of Students in Higher Education* in India by Expenditure Groups, 1986-87

Source: Based on *Sarvekshana* 14 no. 3 Issue No. 46 (January-March 1991): 31-40; and S13-S121.

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B: Under the assumption of charging zero per cent of fees for the third quartile.

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Socio-Economic Indicators

TABLE 12.1
Literacy Rates in India, 1951-1991

<i>Year</i>	<i>Persons</i>	<i>Males</i>	<i>Females</i>
1951	18.33	27.16	8.86
1961	28.31	40.40	15.34
1971	34.45	45.95	21.97
1981	43.67	56.50	29.85
1991	52.21	64.13	39.29

- Notes :*
1. Literacy rates for 1951, 1961 and 1971 related to population aged five years and above. The rates for the years 1981 and 1991 relate to the population aged seven years and above.
 2. Census could not be conducted in 1981 in Assam and in 1991 in Jammu and Kashmir.

Source : Annual Report, 1994-95, Part-I, Govt. of India, Department of Education, 1995, Ministry of Human Resource Development, New Delhi, p. 202.

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TABLE 12.2
Distribution of Literates and Illiterates among Population Aged 7 year and above by Sex and Area, 1981-1991

(in millions)

Year/Area	Literates			Illiterates		
	Persons	Males	Females	Persons	Males	Females
1981*						
All Areas	234.15 (43.6)	157.08 (56.5)	77.07 (29.8)	302.06 (56.4)	120.96 (43.5)	181.10 (70.2)
Rural Areas	146.60 (36.1)	103.51 (49.7)	43.09 (21.8)	259.59 (63.9)	104.80 (50.3)	154.79 (78.2)
Urban Areas	87.55 (67.3)	53.57 (76.8)	33.98 (56.4)	42.47 (32.7)	16.16 (23.2)	26.31 (43.6)
1991**						
All Areas	349.76 (52.2)	223.70 (64.2)	126.06 (39.2)	320.41 (47.8)	124.77 (35.8)	195.64 (60.8)
Rural Areas	218.32 (44.5)	146.38 (57.8)	71.94 (30.3)	271.81 (55.5)	106.69 (42.2)	165.12 (69.7)
Urban Areas	131.44 (73.1)	77.32 (81.0)	54.12 (63.9)	48.60 (26.9)	18.08 (19.0)	30.52 (36.1)

* Excludes Assam where 1981 Census was not held.

** Excludes Jammu & Kashmir where 1991 Census was not held. Literacy rates and number of illiterates for 1991 are based on estimated population aged 7 years and above.

Note : Figures in Parenthesis indicate percentage to the corresponding population.

Source : Annual Report, 1994-95, Part-I, Govt. Of India, Deptt. of Education, 1995.

Ministry of Human Resource Development, New Delhi, p. 203.

TABLE 12.3
Percentage of Literates to Estimated Population Aged 7Yrs and above in States/Union Territories 1981 & 1991

Sl. No.	State/Union Territories	1981 Literacy rates			1991 Literacy rates		
		Persons	Males	Females	Persons	Males	Females
1	2	3	4	5	6	7	8
1.	Andhra Pradesh	35.66	46.83	24.16	44.09	55.13	32.72
2.	Arunachal Pradesh	25.55	35.12	14.02	41.59	51.45	29.69

1	2	3	4	5	6	7	8
3.	Assam	0.00	0.00	0.00	52.89	61.87	43.03
4.	Bihar	32.05	46.60	16.52	38.48	52.49	22.89
5.	Goa	65.71	76.01	55.17	75.51	83.64	67.09
6.	Gujarat	52.21	65.14	38.46	61.29	73.13	48.64
7.	Haryana	43.88	58.51	26.93	55.85	69.10	40.47
8.	Himachal Pradesh	51.18	64.27	37.72	63.86	75.36	52.13
9.	Jammu & Kashmir	32.68	44.18	19.55	0.00	0.00	0.00
10.	Karnataka	46.21	58.73	33.17	56.04	67.26	44.34
11.	Kerala	81.56	87.73	75.65	89.81	93.62	86.17
12.	Madhya Pradesh	34.23	48.42	19.00	44.20	58.42	28.85
13.	Maharashtra	55.83	69.65	41.01	64.87	76.56	52.32
14.	Manipur	49.66	64.15	34.67	59.89	71.63	47.60
15.	Meghalaya	42.05	46.65	37.17	49.10	53.12	44.85
16.	Mizoram	74.26	79.36	68.61	82.27	85.61	78.60
17.	Nagaland	50.28	58.58	40.39	61.65	67.62	54.75
18.	Orissa	40.97	56.45	25.14	49.09	63.09	34.68
19.	Punjab	48.17	55.56	39.70	58.51	65.66	50.41
20.	Rajasthan	30.11	44.77	14.00	38.55	54.99	20.44
21.	Sikkim	41.59	53.00	27.38	56.94	65.74	46.69
22.	Tamil Nadu	54.39	68.05	40.43	62.66	73.75	51.33
23.	Tipura	50.11	61.49	38.01	60.44	70.58	49.65
24.	Uttar Pradesh	33.35	47.45	17.19	41.60	55.73	25.31
25.	West Bengal	48.65	59.93	36.07	57.70	67.81	46.56
26.	A & N Islands	63.19	70.29	53.19	73.02	78.99	65.46
27.	Chandigarh	74.81	78.89	69.31	77.81	82.04	72.34
28.	D & N Haveli	32.70	44.64	20.37	40.71	53.56	26.98
29.	Daman & Diu	59.91	74.47	46.50	71.20	82.66	59.40
30.	Delhi	71.94	79.28	62.60	75.29	82.01	66.99
31.	Lakshadweep	68.42	81.24	55.32	81.78	90.18	72.89
32.	Pondicherry	65.14	77.09	53.03	74.74	83.68	65.63
	INDIA	43.67	56.50	29.85	52.21	64.13	39.29

* Census were not conducted in Assam in 1981 and J & K in 1991.

Source : Annual Report, 1994-95, Part-I, Govt. of India, Department of Education, 1995.

Ministry of Human Resource Development, New Delhi, p. 204

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TABLE 12.4
Growth of Recognised Educational Institutions,
1950-51 to 1993-94

Year	Primary	Upper Primary
1950-51	209671	13596
1960-61	330399	49663
1970-71	408378	90621
1980-81	494503	118555
1990-91	560935	151456
1991-92 P	565786	152077
1992-93 P	572541	153921
1993-94 P	572923	155707

P = Provisional.

Source : Annual Report 1994-95, Part-1, Govt. of India, Department of Education, 1995, Ministry of Human Resource Development, New Delhi, p. 209.

TABLE 12.5
Progress of Enrollment at Primary and Middle Level by Sex in India, 1950-51 to 1993-94

(Million persons)

Year	<i>Primary Level (Class I-V)</i>			<i>Middle Level (Classes VI-VIII)</i>		
	<i>(Age 6-11 Years)</i>			<i>(Age 11-14 Years)</i>		
	<i>Boys</i>	<i>Girls</i>	<i>Total</i>	<i>Boys</i>	<i>Girls</i>	<i>Total</i>
1	2	3	4	5	6	7
1950-51	13.8	5.4	19.2	2.6	0.5	3.1
1960-61	23.6	11.4	35.0	5.1	1.6	6.7
1970-71	35.7	21.3	57.0	9.4	3.9	13.3
1980-81	45.3	28.5	73.8	13.9	6.8	20.7
1990-91	57.0	40.4	97.4	21.5	12.5	34.0
1991-92*	59.2	42.4	101.6	21.4	13.0	34.4
1992-93*	60.5	44.9	105.4	23.7	15.0	38.7
1993-94*	61.8	46.4	108.2	24.2	15.7	39.9
1950-51	60.0	24.8	84.8	20.6	4.8	25.4
1960-61	82.6	41.4	124.0	33.2	11.3	44.5
1970-71	92.6	59.1	151.7	46.5	20.8	67.3
1980-81	99.0	66.2	165.2	52.1	27.2	79.3

1	2	3	4	5	6	7
1990-91	115.3	86.0	101.0	73.4	46.1	60.1
1991-92*	116.6	88.1	102.7	74.2	47.4	61.2
1992-93*	118.1	92.7	105.7	80.5	53.8	67.5
1993-94*	115.3	92.9	104.5	79.3	55.2	67.7

* Provisional.

Sources : 1. A Handbook of Educational and Allied Statistics, 1987, pp. 228-229.
2. Selected Educational Statistics, 1985-86 to 1993-94.

TABLE 12.6

Enrollment Ratio at Primary and Middle Level by Sex in States/Union Territories, 1993-94

Sl No.	State/Union Territories	Classes I-V (6-11 Yrs.)			Classes VI-VII (11-14 Yrs.)		
		Boys	Girls	Total	Boys	Girls	Total
1	2	3	4	5	6	7	8
1.	Andhra Pradesh	116.4	100.1	108.4	73.9	53.1	63.7
2.	Arunachal Pradesh	132.5	99.2	115.8	62.5	46.3	54.5
3.	Assam	134.4	125.3	130.0	89.3	65.5	77.7
4.	Bihar	95.9	54.4	76.1	47.4	21.0	34.7
5.	Goa	102.3	93.7	98.0	104.3	88.6	96.4
6.	Gujarat	131.4	106.0	119.1	82.8	55.5	69.6
7.	Haryana	109.7	95.4	102.8	81.8	59.2	70.9
8.	Himachal Pradesh	126.8	111.5	119.1	124.4	97.9	111.2
9.	Jammu & Kashmir	104.3	72.6	88.8	79.7	48.8	64.7
10.	Karnataka	124.3	115.2	119.9	72.4	57.2	65.0
11.	Kerala	103.8	100.8	102.3	108.3	105.7	107.0
12.	Madhya Pradesh	116.7	91.3	104.5	82.5	50.0	66.9
13.	Maharashtra	123.6	115.0	119.4	89.0	71.9	80.7
14.	Manipur	100.3	96.0	98.2	77.9	68.4	73.2
15.	Meghalaya	77.8	71.8	74.8	42.7	38.3	40.5
16.	Mizoram	138.6	132.3	135.6	111.7	103.2	107.5
17.	Nagaland	110.9	101.6	106.3	70.1	68.9	69.5
18.	Orissa	116.8	77.6	96.8	67.5	46.9	57.0
19.	Punjab	92.9	88.1	90.6	71.8	63.4	67.8
20.	Rajasthan	119.5	60.9	91.0	76.8	28.9	53.9
21.	Sikkim	123.8	111.1	117.6	59.9	59.3	59.6

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1	2	3	4	5	6	7	8
22.	Tamil Nadu	149.0	140.8	145.0	111.3	91.0	101.4
23.	Tripura	141.3	119.1	130.3	92.9	72.2	82.8
24.	Uttar Pradesh	103.9	72.8	89.3	72.2	35.4	55.0
25.	West Bengal	124.7	123.0	123.9	98.2	89.1	93.8
26.	A & N Islands	101.5	85.5	93.2	84.4	75.2	79.9
27.	Chandigarh	65.5	64.0	64.8	62.2	63.3	62.7
28.	D & N Haveli	125.7	92.6	109.9	58.3	36.7	48.0
29.	Daman & Diu	--	--	--	--	--	--
30.	Delhi	86.3	87.4	86.8	81.6	78.0	79.9
31.	Lakshadweep	153.6	129.3	141.5	125.2	96.5	111.3
32.	Pondicherry	146.4	133.7	140.5	138.8	125.5	132.2
INDIA		115.3	92.9	104.5	79.3	55.2	67.7

Source : Annual Report, 1994-95, Part-I, Govt. of India, of Education, 1995, Ministry of Human Resource Development, New Delhi, p. 214.

Table 12.7

Number of institutions and enrolment in pre-primary pre-basic stage in States/ Union Territories, 1993-94

(As on 30 September, 1993)

Sl.State/Union Territory No.	Pre-Primary/ Pre-Basic Schools	Enrollment		
		Boys	Girls	Total
1 2	3	4	5	6
1. Andhra Pradesh	18	33693	25221	58914
2. Arunachal Pradesh	299	9510	7132	16642
3. Assam	482	10678	8617	19295
4. Bihar	1	20920	11347	32267
5. Goa	0	0	0	0
6. Gujarat	2380	90506	65781	156287
7. Haryana	27	5864	4156	10020
8. Himachal Pradesh	15	3300	2740	6040
9. Jammu & Kashmir	0	10828	7625	18453
10. Karnataka	5336	184674	159192	343866
11. Kerala	261	7870	7120	14990
12. Madhya Pradesh	634	68903	49423	118331

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1	2	3	4	5	6
13.	Maharashtra	2507	191965	168248	360213
14.	Minipur	1	48510	43490	92000
15.	Meghalaya	0	70720	62899	133627
16.	Mizoram	0	0	0	0
17.	Nagaland	0	36913	33547	70460
18.	Orissa	0	0	0	0
19.	Punjab	2	13136	9706	22842
20.	Rajasthan	33	81000	59000	140000
21.	Sikkim	723	9263	7866	17129
22.	Tamil Nadu	22	2176	2481	4657
23.	Tripura	3410	82311	81485	163796
24.	Uttar Pradesh	45	22854	14683	37537
25.	West Bengal	0	0	0	0
26.	A & N Island	23	2403	1977	4380
27.	Chandigarh	0	7004	5555	12559
28.	Dadra & Nagar Haveli	0	129	100	229
29.	Daman & Diu	12	410	303	713
30.	Delhi	760	34810	37519	72329
31.	Lakshadweep	9	520	536	1056
32.	Pondicherry	172	6928	51312	12060
INDIA		17172	1057806	882886	1940692

Source : Selected Educational Statistics, 1993-94, pp. 14 & 23.

TABLE 12.8

Elementary Education : Projected Enrollment for Eighth Plan (1992-97)

(Figures in Crores)

Sl. No.	Stage	Population by 1997		Population with overage/underage children		Enrolment achieved upto 1991-92		Addnl. populatin to be enrolled by 1997	
		Total	Female	Total	Female	Total	Female	Total	Female
1	2	3	4	5	6	7	8	9	10
1.	Elem. Edn	16.64	8.09	19.14	9.30	13.53	5.54	5.61 (67%)	3.76
	(a) Primary (I-V)	10.53	5.12	12.11	5.89	10.09	4.24	2.02 (82%)	165
	(b) Upper Primary (VI-VIII)	6.11	2.97	7.03	3.41	3.44	1.30	3.59 (59%)	2.11

Source : Eighth Five Year Plan, 1992-97, Planning Commission, Govt. of India, p. 286.
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Table 12.9

Eighth Plan (1992-97) targets-additional enrolment-elementary and adult education

(Figures in 000's)

Sl. No.	State/Union Territory	Primary (Classes I-V)		Upper Primary Classes (VI-VIII)		Elementary Classes (I-VIII)		Adult Education age 15-35 year
		Girls	Total	Girls	Total	Girls	Total	
1	2	3	4	5	6	7	8	9
1.	Andhra Pradesh	1475	2588	840	1400	2315	3988	7778
2.	Arunachal Pradesh	12	27	14	36	26	63	175
3.	Assam	244	500	384	800	628	1300	4500
4.	Bihar	4032	8400	1008	2100	5040	10500	9400
5.	Goa	3	6	5	9	8	15	100
6.	Gujarat	72	108	475	1100	547	1208	4300
7.	Haryana	173	275	180	300	353	575	5711
8.	Himachal Pradesh	58	125	29	66	87	191	800
9.	Jammu & Kashmir	62	150	85	227	147	377	600
10.	Karnataka	215	434	98	197	313	631	600
11.	Kerala	129	252	42	80	171	332	980
12.	Madhya Pradesh	2310	3460	1796	2396	4106	5856	5500
13.	Maharashtra	600	1400	300	750	900	2150	9200
14.	Nagpur	12	29	36.70	68.20	48.70	97.20	23
15.	Meghalaya	15	30	22	51	37	81	262
16.	Mizoram	12	25	12	29	24	54	32
17.	Nagaland	16	32	17.50	34	33.50	66	23
18.	Orissa	247	600	142	416	389	1016	130
19.	Punjab	80	190	54	127	134	317	5000
20.	Rajasthan	2180	2647	621	1565	2729	4212	11000
21.	Sikkim	5	11	7	16	12	27	4
22.	Tamil Nadu	215	425	491	1142	706	1567	7800
23.	Tripura	13	25	36	89	49	114	400
24.	Uttar Pradesh	866	2480	530	1930	1396	4410	16700
25.	West Bengal	801	1638	1359	2788	2160	4426	8559
	Total-(States)	13775	25857	8584.20	17716.20	22359.20	43573.20	104977
26.	A & N Islands	4.00	9.00	2.00	6.00	6.00	15.00	10

1	2	3	4	5	6	7	8	9
27.	Chandigarh	4.80	10.10	3.80	8.10	8.60	18.20	26
28.	Dadra & Nager Haveli	0.05	0.11	0.03	0.13	0.08	0.24	15
29.	Daman & Diu	0.50	1.00	0.50	1.00	1.00	2.00	20
30.	Delhi	38.00	96.00	24.00	85.00	62.00	181.00	750
31.	Lakshadweep	0.05	0.20	0.05	0.10	0.10	0.30	12
32.	Pondicherry	3.00	6.00	1.80	4.00	4.80	10.00	30
	Total-(UTs)	50.40	122.41	32.18	104.33	82.58	226.74	863
Total-(States & UTs)		13825.40	25979.41	8616.38	17820.53	22441.78	43799.94	105840

Source : Eighth Five Year Plan, 1992-97, Planning Commission, Govt. of India, p. 319.

TABLE 12.10

Drop-out rates at Primary and Middle Stage by Sex in States/Union Territories, 1993-94

Sl. No.	State/ Union Territories	Primary Classes (I-V)			Middle Classes (VI-VIII)		
		Boys	Girls	Total	Boys	Girls	Total
1	2	3	4	5	6	7	8
1.	Andhra Pradesh	42.48	41.78	42.18	59.94	66.46	62.82
2.	Arunachal Pradesh	60.09	61.09	60.52	69.62	67.45	68.72
3.	Assam	38.65	39.55	39.05	63.81	71.80	67.55
4.	Bihar	61.85	66.20	63.36	76.70	82.73	78.74
5.	Goa	-7.95	3.09	-2.57	8.57	16.34	12.28
6.	Gujarat	42.05	51.39	46.25	54.65	66.46	59.97
7.	Haryana	1.60	6.81	3.93	17.57	32.05	23.91
8.	Himachal Pradesh	24.64	28.16	26.28	13.11	27.39	19.74
9.	Jammu & Kashmir	53.12	42.35	48.66	45.25	72.73	56.46
10.	Karnataka	37.50	44.42	40.78	56.83	69.72	62.98
11.	Kerala	-5.35	-3.05	-4.23	1.24	0.57	0.91
12.	Nadhy Pradesh	23.43	34.96	28.36	38.12	54.15	44.68
13.	Maharashtra	24.10	31.63	27.62	44.02	56.30	49.79
14.	Manipur	68.02	68.53	68.26	72.41	72.26	72.34
15.	Meghalaya	29.96	34.43	32.06	58.14	57.11	57.65
16.	Mizoram	56.73	58.54	57.58	54.05	50.60	52.44
17.	Nagaland	37.56	24.13	31.65	36.71	39.58	38.13
18.	Orissa	52.78	52.23	52.54	62.64	59.04	61.21
19.	Punjab	20.69	22.94	21.74	36.15	42.78	39.22
20.	Rajasthan	45.79	55.63	48.93	62.34	72.34	65.43

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1	2	3	4	5	6	7	8
21.	Sikkim	63.18	61.19	62.27	78.83	77.93	78.43
22.	Tamil Nadu	16.39	18.35	17.30	32.15	41.20	36.34
23.	Tripura	60.57	66.95	63.49	66.28	70.92	68.39
24.	Uttar Pradesh	19.86	20.08	19.94	31.99	47.63	37.51
25.	West Bengal	36.17	45.76	40.43	48.82	43.96	46.67
26.	A & N Islands	9.26	10.34	9.77	25.25	29.62	27.32
27.	Chandigarh	-20.31	-9.04	-14.90	-5.96	-12.79	-9.09
28.	Dadra & Nagar Haveli	40.50	55.19	47.00	57.77	67.93	62.21
29.	Daman & Diu	-7.32	-2.97	-5.32	0.00	0.00	0.00
30.	Delhi	19.25	28.83	25.74	1989	31.24	25.35
31.	Lakshadweep	12.55	18.75	15.51	47.18	57.43	52.16
32.	Pondicherry	-7.86	-8.20	-.02	7.71	7.23	7.49
India		35.05	38.57	36.32	49.95	56.78	52.80

Source : Annual Report, 1994-95, Part-I, Govt. of India, Department of Education, 1995 Ministry of Human Resource Development, New Delhi, p. 219 & 220.

TABLE 5.12
-Eighth Plan Outlay for Major Heads of Education

		(Rs. in crores)			
Sl. No.	Major Head	Centres	States	U.T.s	Total
1	2	3	4	5	6
1.	General Education	6619.00	9607.19	587.16	16813.35
2.	Technical Education	824.00	1804.66	157.72	2786.38
3.	(Total 1 & 2)	7443.00	11411.85	744.88	19599.73
4.	Art & Culture	385.00	324.76	17.92	727.68
5.	Youth Affairs & Sports	350.00	509.06	30.54	989.60
Grand Total (3-5)		8178.00	12245.67	793.34	21217.01

Source : Eighth Five Year Plan, 1992-97, Planning Commission, Govt. of India, p. 320.

TABLE 12.12
Domestic product in States/Union Territories, 1992-93

(Fig. in lakhs)

<i>Sl.</i>	<i>State/Union Territory</i>	<i>Year</i>	<i>Expenditure on Edn. by Edn. Deptt.</i>	<i>Estimates of NDP current prices (Rs. in Crores)</i>	<i>% of Budget of Deptt. (Rev.) to Domestic Product</i>
1	2	3	4	5	6
1.	Andhra Pradesh	1992-93	1355.31	39704.10	3.4
2.	Arunachal Pradesh	1992-93	50.67	571.70	8.9
3.	Assam	1992-93	680.01	11735.60	5.8
4.	Bihar	1992-93	1323.41	29341.50	4.5
5.	Goa	1992-93	82.29	1222.00	6.7
6.	Gujarat	1992-93	1100.63	32239.80	3.4
7.	Haryana	1992-93	431.02	16391.80	2.6
8.	Himachal Pradesh	1991-92	196.15	2797.90	7.0
9.	Jammu & Kashmir	1991-92	138.10	3368.10	4.1
10.	Karnataka	1992-93	1151.51	29121.50	4.0
11.	Kerala	1993-94	1130.69	16944.60	6.7
12.	Madhya Pradesh	1992-93	1118.89	32306.60	3.5
13.	Maharashtra	1992-93	2305.12	75481.30	3.1
14.	Manipur	1991-92	85.23	760.50	11.2
15.	Meghalaya	1992-93	77.17	1070.70	7.2
16.	Mizoram	1990-91	42.51	304.00	14.0
17.	Nagaland	1991-92	49.46	680.50	7.3
18.	Orissa	1992-93	698.07	12922.20	5.4
19.	Punjab	1992-93	657.93	22499.20	2.9
20.	Rajasthan	1993-94	1129.38	23302.20	4.8
21.	Sikkim	1991-92	26.71	223.80	11.9
22.	Tamil Nadu	1992-93	1546.19	35224.50	4.4
23.	Tripura	1990-91	103.37	930.60	11.1
24.	Uttar Pradesh	1992-93	2267.67	61266.90	3.7
25.	West Bengal	1992-93	1515.11	41603.50	3.6
26.	A & N Islands	1992&93	24.31	206.90	11.7
27.	Ghandigarh	--	--	--	--

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1	2	3	4	5	6
28.	Dadra & Nagar Haveli	--	--	--	--
29.	Daman & Diu	--	--	--	--
30.	Delhi	1991-92	306.08	11201.30	2.7
31.	Lakshadweep	--	--	--	--
32.	Pondicherry	1992-93	42.08	792.80	5.3
(ALL INDIA) (Centre + States/UTs)		1992-93	21369.90	55.6344.00	3.8

Source : Annual Report, 1994-95, Part-I, Department of Education, Govt. of India, Ministry of Human Resource Development, New Delhi, p. 230.

TABLE 12.13

Budgetted Expenditure (Revenue Account) of Education and Other Department, 1992-93

Sl.State/Union Territory No. (Revenue Account)	Budget Expenditure			Popu- lation (As on 1-3-93)	Per capita Budgetted Expendi- ture (in Rs.)	Percentage of Budg- etted Ex- penditure on educa- tion to total Budget (Revenue Account)
	Plan	Non-Plan (Rd. in crore)	Total			
1	2	3	4	5	6	7
1.	Andhra Pradesh	190.67	1563.81	1754.48	677080	259.12
2.	Arunachal Pradesh	19.15	31.35	50.50	8811	573.15
3.	Assam	251.19	471.05	722.24	259199	278.64
4.	Bihar	193.30	1401.25	1594.55	922607	172.83
5.	Goa	16.05	66.06	82.11	13228	620.73
6.	Gujarat	86.75	1154.81	1241.56	437352	283.88
7.	Haryana	108.13	405.25	513.38	175118	293.16
8.	Himachal Pradesh	58.69	191.17	249.86	55620	449.23
9.	Jammu & Kashmir	29.48	139.30	168.78	81084	208.15
10.	Karnataka	282.50	1043.86	1326.36	463071	286.43
11.	Kerala	68.48	1033.57	1102.05	309292	356.31
12.	Madhya Pradesh	326.70	1191.45	1518.15	681121	222.89
13.	Maharashtra	101.00	2237.23	2338.23	809462	288.86
14.	Manipur	19.31	77.29	96.60	19434	497.07

1	2	3	4	5	6	7	8
15.	Meghalaya	27.27	61.33	88.60	18227	486.09	20.31
16.	Mizoram	12.39	43.93	56.32	7417	759.34	17.20
17.	Nagaland	12.82	50.26	63.08	11715	538.45	13.45
18.	Orissa	211.48	549.10	760.58	331888	229.17	23.41
19.	Punjab	139.64	622.16	761.80	209764	363.17	20.47
20.	Rajasthan	214.85	930.05	1144.90	456583	250.75	24.01
21.	Sikkim	12.12	20.73	32.85	4854	676.76	19.55
22.	Tamil Nadu	108.07	1554.74	1662.81	558840	292.32	22.92
23.	Tripura	40.35	112.69	153.04	28009	546.40	23.37
24.	Uttar Pradesh	254.56	2065.58	2320.14	1402792	165.39	20.35
25.	West Bengal	234.65	1734.87	1969.52	686274	286.99	30.38
26.	A & N Islands	5.16	20.54	25.80	3031	851.20	14.06
27.	Chandigarh	7.78	45.24	53.02	7641	693.89	23.77
28.	D & N Haveli	1.35	3.61	4.96	1506	329.35	13.60
29.	Daman & Diu	1.16	3.72	4.88	1039	469.68	18.59
30.	Delhi	70.66	294.35	365.01	97405	374.73	32.14
31.	Lakshadweep	1.45	5.03	6.48	565	1146.90	12.88
32.	Pondicherry	15.40	35.88	51.28	8023	639.16	19.93
India		15.40	20298.54	25156.27	8758052	287.24	13.62

Source : Selected Educational Statistics, 1993-94, p. 55

TABLE 12.14

National Income and Per Capita Income in India, 1950-51 to 1993-94

Year	Gross National Product at Factor Cost (Rs. Crores)		Net National Product at Factor Cost (Rs. Crores)		Per Capita Net National Product (Rs.)	
	At Current Prices	At 1980-81 Prices	At Current Prices	At 1980-81 Prices	At Current Prices	At 1980-81 Prices
1	2	3	4	5	6	7
1950-51	8,938	42,644	8,525	40,454	237.5	1126.9
1955-56	9,709	51,119	9,106	48,288	231.7	1228.7
1960-61	15,182	62,532	14,160	58,602	326.3	1350.3
1965-66	23,899	71,338	22,107	65,734	455.8	1355.3
1970-71	39,424	89,465	36,362	82,211	672.1	1519.6
1975-76	70,946	104,560	64,531	95,433	1063.1	1572.2

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1	2	3	4	5	6	7
1980-81	122,772	122,772	110,685	110,685	1630.1	1630.1
1981-82	143,256	129,928	128,797	117,140	1855.9	1687.9
1982-83	158,761	133,299	141,875	119,704	2001.4	1688.3
1983-84	185,779	143,861	166,550	129,392	2300.4	1787.2
1984-85	207,109	149,256	185,018	133,808	2503.6	1810.7
1985-86	232,370	155,365	206,133	139,025	2730.2	1841.4
1986-87	258,225	161,535	228,402	144,242	2962.4	1870.8
1987-88	292,232	168,121	258,891	149,787	3285.4	1900.9
1988-89	348,207	185,277	309,286	165,751	3842.1	2059.0
1989-90	402,930	198,082	357,931	177,552	4354.4	2160.0
1990-91	468,059	207,082	416,495	185,683	4964.2	2213.1
1991-92	540,143	208,488	477,868	185,503	5582.6	2167.1
1992-93	615,831	218,698	543,566	194,093	6233.6	2225.8
1993-94	695,342	228,671	615,273	202,670	6928.8	2282.3

@ : Quick Estimates

Source : Economic Survey, 1994-95

TABLE 12.15

Number and percentage of population below the poverty line by residence in major States,
1987-88 (Provisional)

Sl. No.	State/UTs	Rural		Urban		Combined	
		Number of persons (Lakhs)	Percentage of persons	Number of persons (lakhs)	Percentage of person	Number of persons (lakhs)	percentage of persons
1	2	3	4	5	6	7	8
1.	Andhra P.	153.1	33.8	42.6	26.1	195.70	31.7
2.	Assam	50.4	24.5	2.5	9.4	52.89	22.8
3.	Bihar	300.3	42.7	36.1	30.0	336.54	40.8
4.	Gujarat	56.2	21.2	17.1	12.9	73.25	14.8
5.	Haryana	13.5	11.7	4.7	11.7	18.15	11.6
1	2	3	4	5	6	7	8
6.	Himachal Pradesh	4.4	9.7	0.1	2.4	4.52	9.2
7.	Jammu & Kashmir	8.4	15.5	1.4	8.4	9.79	13.9

1	2	3	4	5	6	7	8
8.	Karnataka	102.8	35.9	33.7	24.2	136.46	32.1
9.	Kerala	37.4	16.4	11.6	19.3	48.98	17.0
10.	Madhya P.	194.0	41.5	30.9	21.3	224.97	36.7
11.	Maharashtra	166.9	36.7	47.2	17.0	214.10	29.2
12.	Orissa	124.2	48.3	10.9	24.1	135.12	44.7
13.	Punjab	9.6	7.2	4.3	7.2	13.88	7.2
14.	Rajasthan	80.6	26.0	19.0	19.4	99.54	24.4
15.	Tamil Nadu	138.4	39.5	38.5	20.5	176.85	32.8
16.	Uttar P.	373.1	37.2	75.2	27.2	448.34	35.1
17.	West Bengal	137.2	30.3	36.3	20.7	173.45	27.6
18.	Small State & UT's	9.3	11.8	4.9	4.7	14.2	7.7
19.	All India	1959.7	33.4	417.0	20.1	2376.7	29.9

- Notes:**
1. The above estimates are derived by using the poverty line of Rs. 49.09 per capita per month at 1973-74 prices corresponding to daily calorie requirement of 2400 per persons in rural areas and the poverty line of Rs. 56.64 per capita per month corresponding to calorie requirement of 2100 in urban areas.
 2. For up-dating the poverty line for 1987-88 C.S.O. Private Consumption deflator has been used.
 3. These calculations are based on the draft report of 43rd Round of National Sample Survey data on household consumer expenditure. (Report No. 372, 'Report on the Fourth Quinquennial Survey on Consumer Expenditure', N.S.S.O., June 1990.
 4. The number of people below poverty line relates to the population as on 1st March 1988.
 5. State-wise poverty ratios have been estimated using the same methodology as was used at the time of formulation of Seventh Five Year Plan. Since then a number of issues have been raised about the methodology of poverty estimation and these issues are being considered by an expert group headed by Dr. D.T. Lakdawala.
 6. The estimates presented here are likely to get revised in the light of the recommendations of the Expert Group.

Source : Planning Commission, India.



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Raipur, Bantalab

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Date: Nov 3, 1992

1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
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